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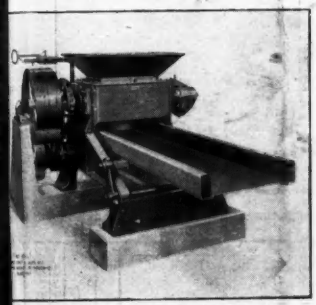
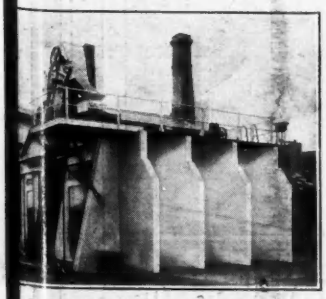


COKE CUTTING MACHINE WITH RECIPROCATING SCREEN

COKE CUTTING MACHINE SCREENING AND BAGGING UNIT



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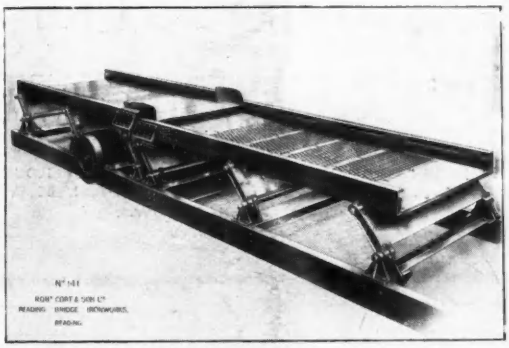

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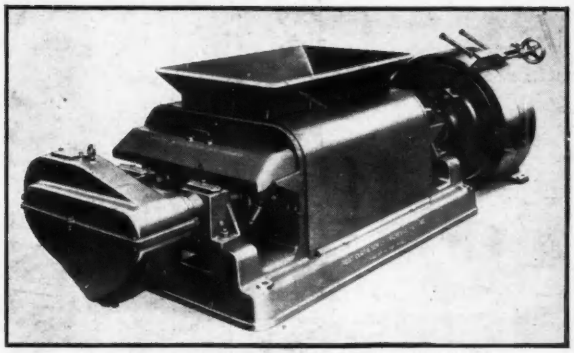

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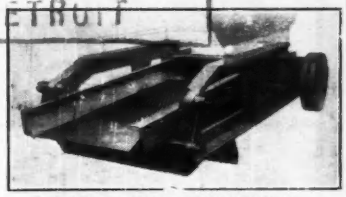
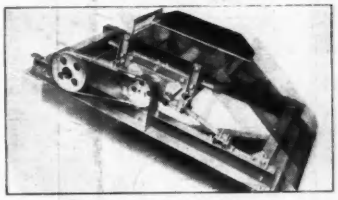
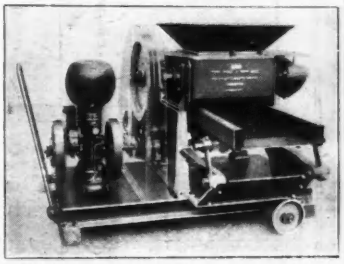


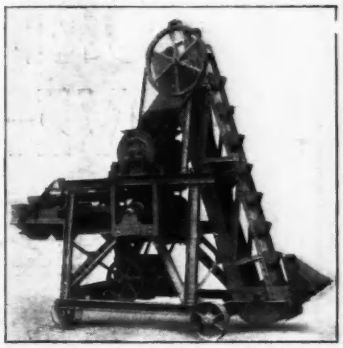
RECIPROCATING DEBREEZING SCREEN



VIBRATORY SCREEN



PORTABLE COKE CUTTING AND SCREENING UNIT



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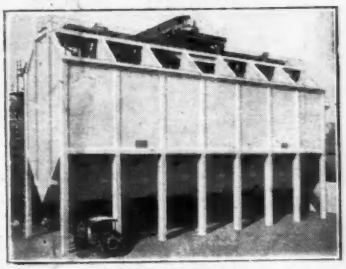

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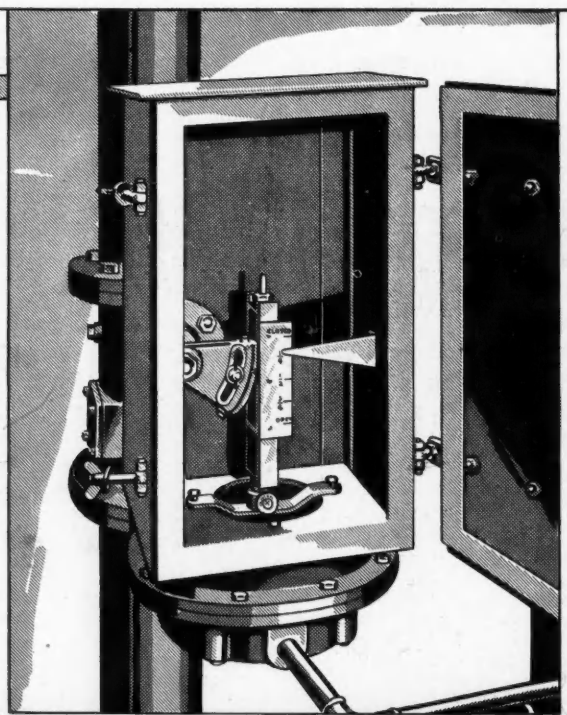

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VOL. 245 97th YEAR No. 4261

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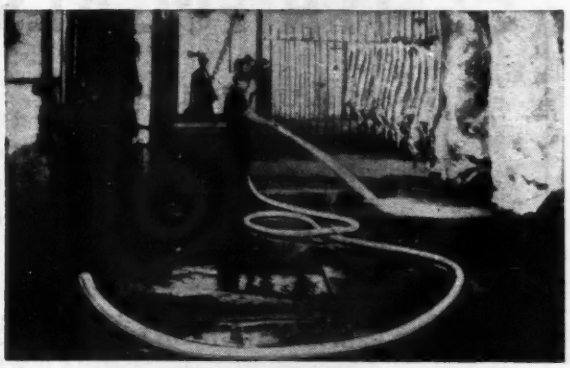

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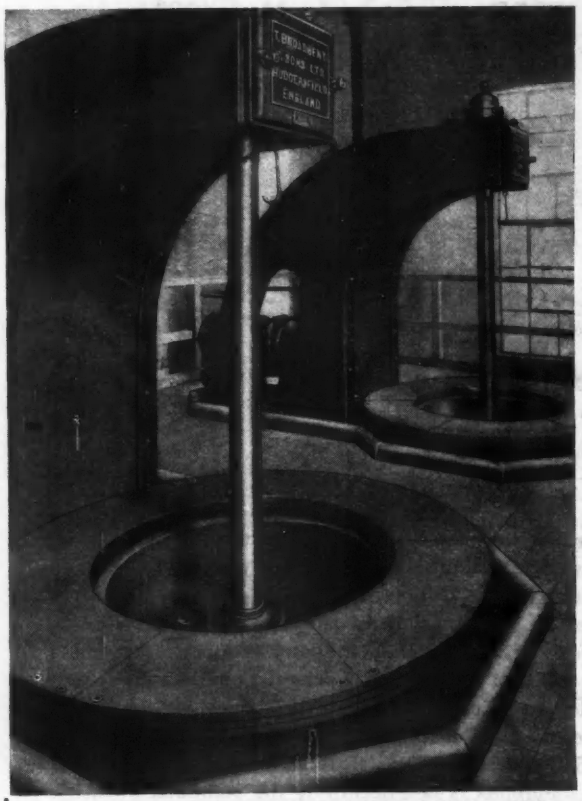

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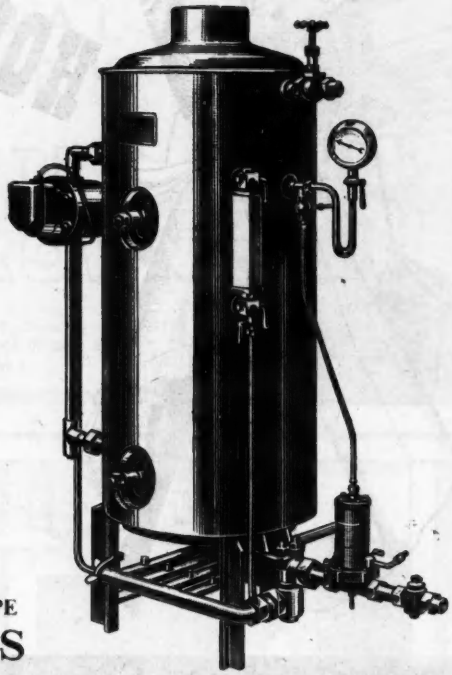

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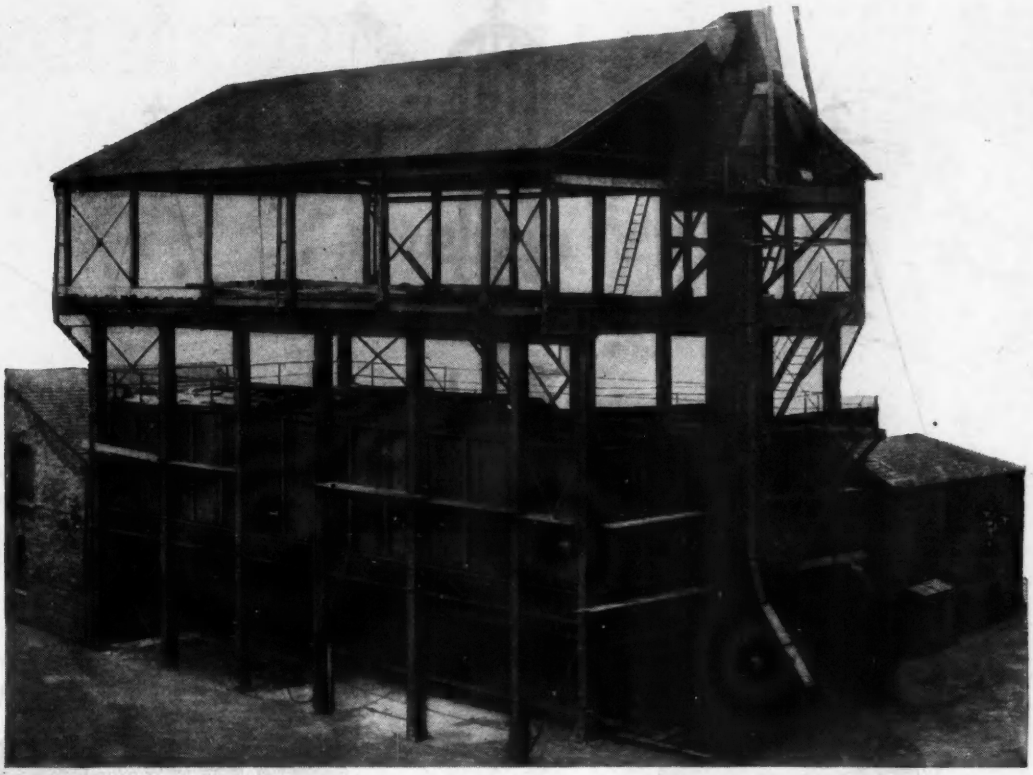

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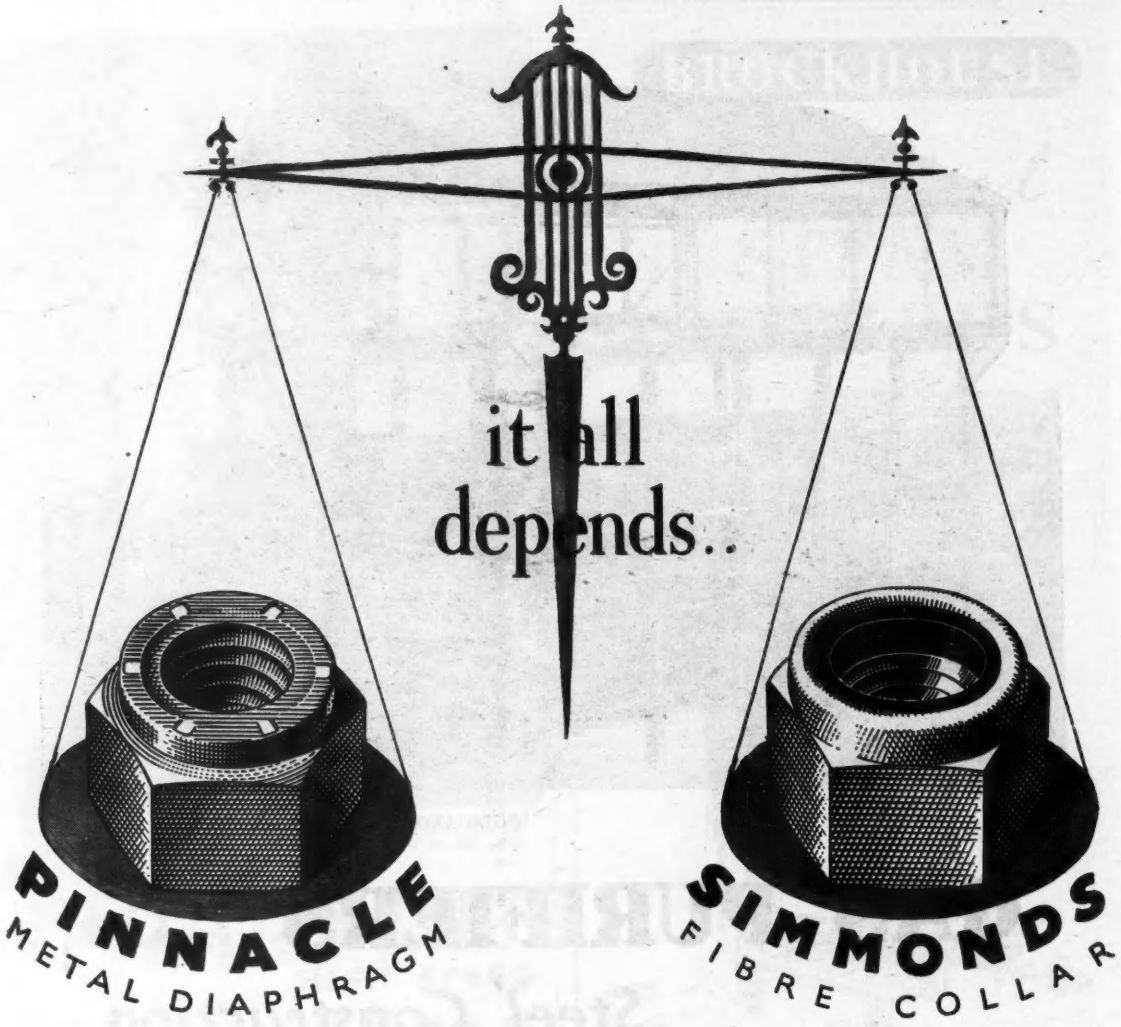

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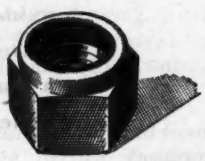

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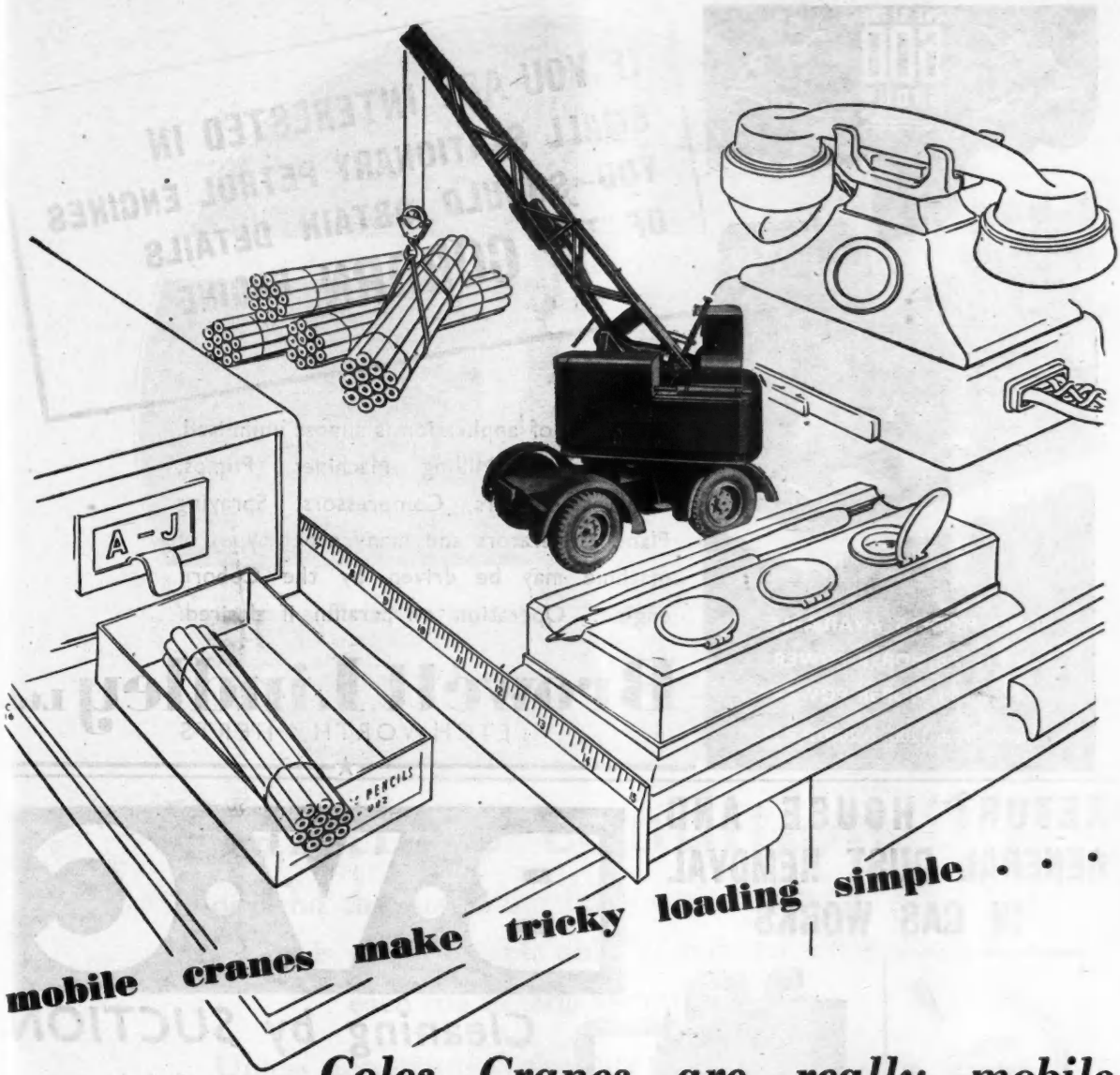

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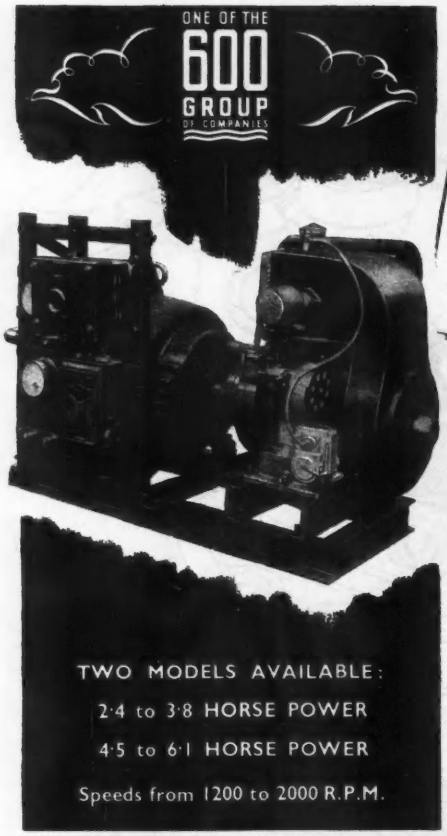

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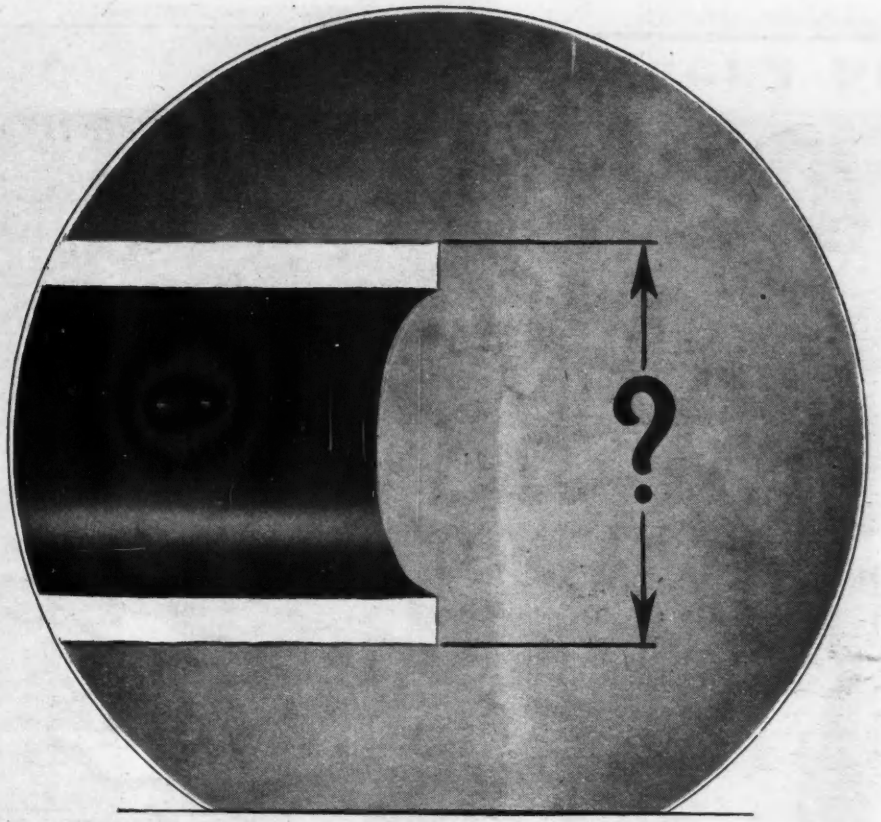

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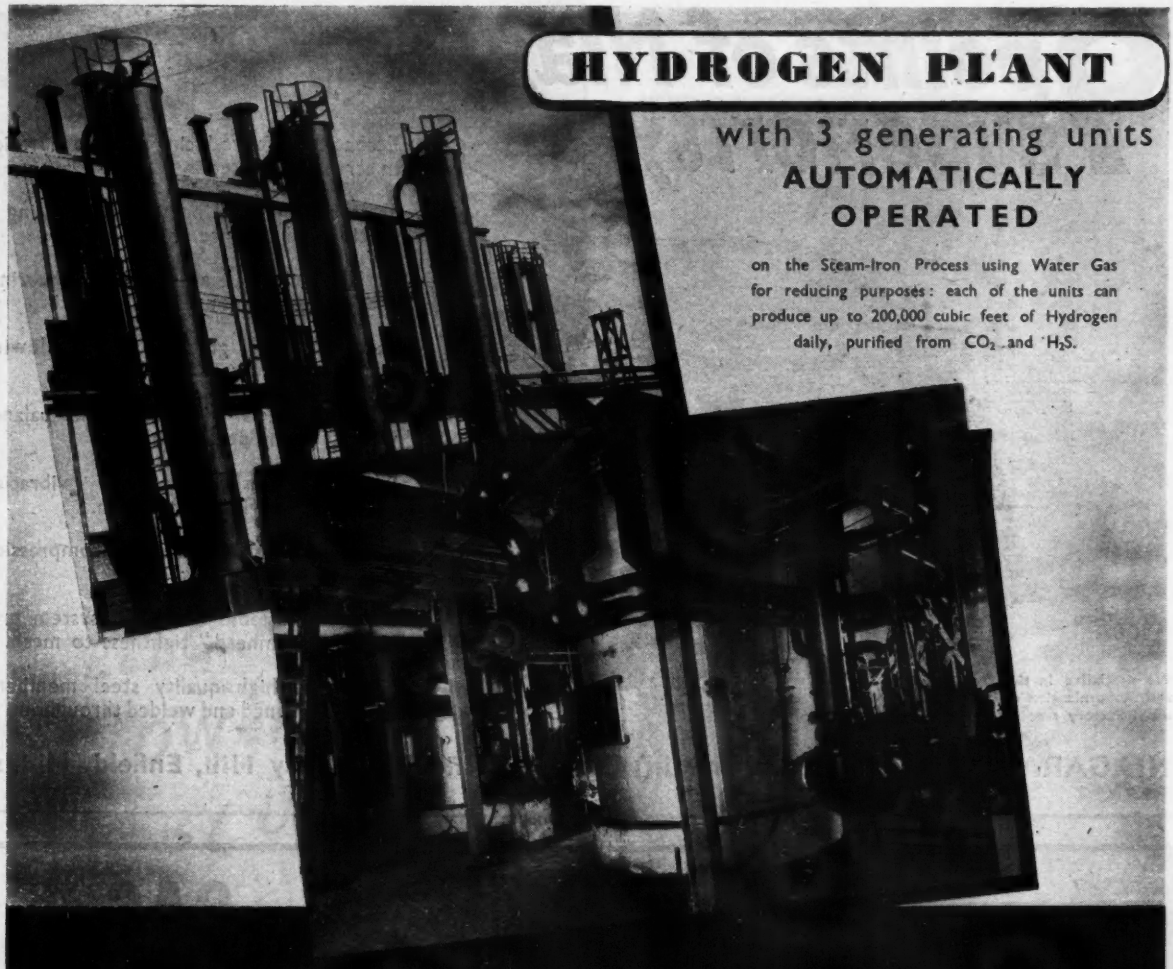

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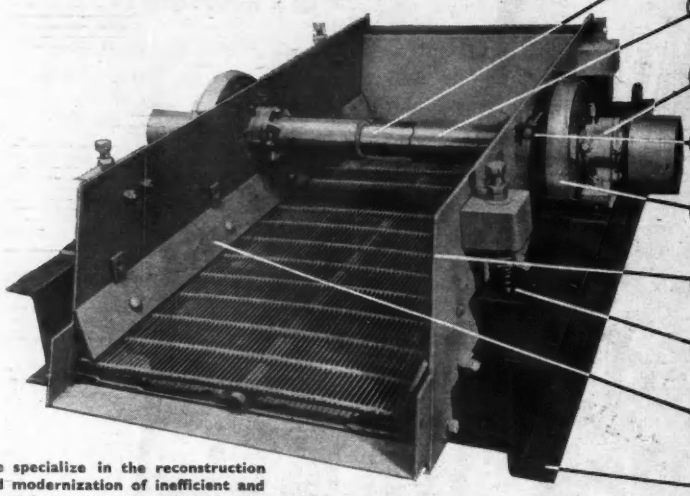

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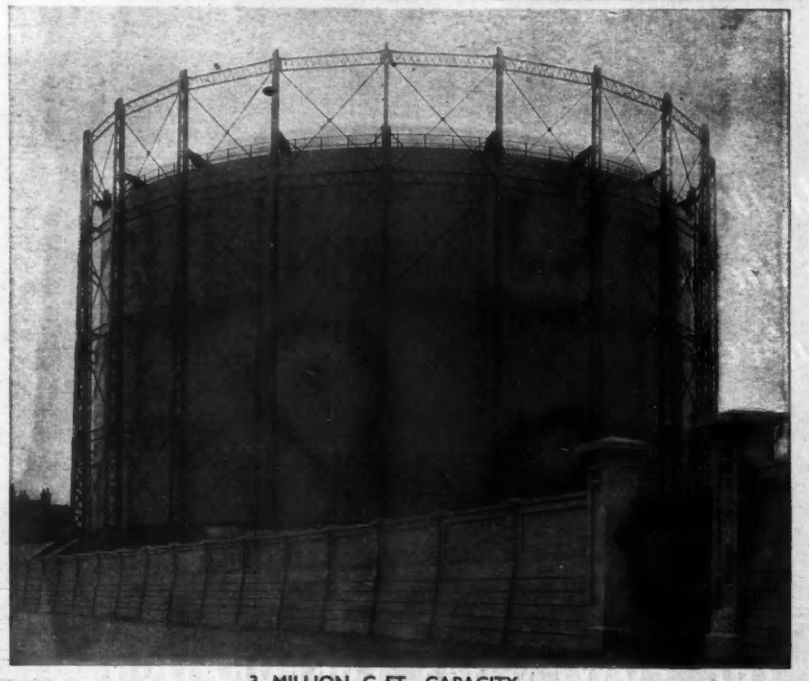

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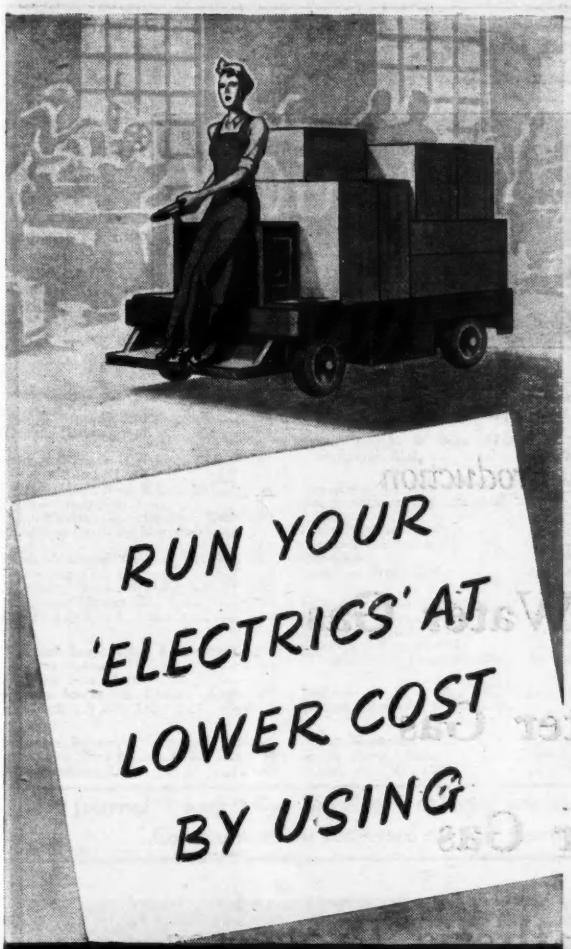

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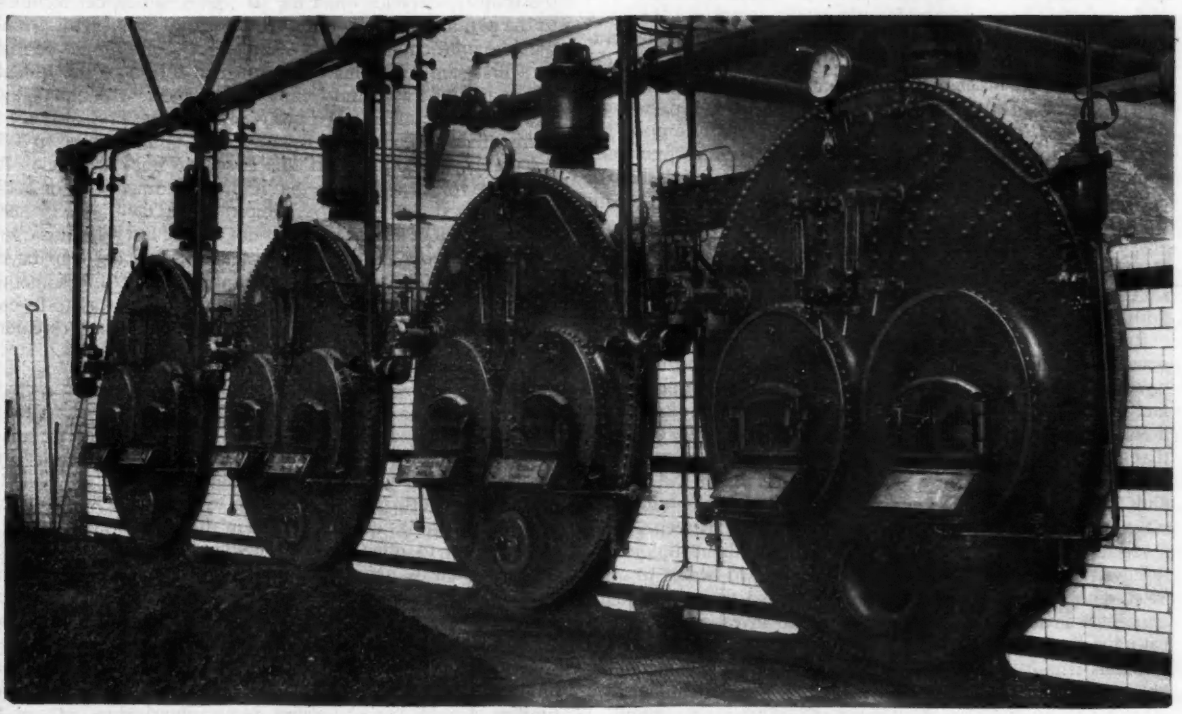

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GAS JOURNAL, JAN. 17, 1945

VOL. 245 97th YEAR No. 4261

EDITORIAL NOTES

IS THIS IT?

TO the onlooker the internal affairs of the Gas Industry in recent years have presented a most bewildering spectacle.

Between the wars, the need for its strengthening through an increased measure of unity became progressively more obvious, and this need was visualized by none more clearly than by that far-sighted leader, Sir David Milne-Watson. His conception of a Federation loosely knitting all the national bodies appeared most promising as a start, and indeed it served well enough for certain informal occasions when a kind of demonstration of unity was called for, without the need for taking decisions or sealing contracts in the common name. For reasons which became clear to all as the position was more closely examined, the development of the Federation into formal representation of the whole Industry presented insuperable difficulties. There remained, however, with increasing urgency clearly recognized, the desperate need for a reorganization of the Industry, and the efforts of the past few years have been so involved, almost so chaotic, that we dare not try to retrace them in detail. We hope, as we shall presently show, that the latest development may be the beginning of better things, and enable the Industry to draw a veil across a period of its history which has shown administrative incompetence contrasting strangely with the brilliance of its technical achievements.

The most bewildering aspect to anyone not in the innermost counsels has been the fact that every attempt—and there have been many—to formulate an acceptable policy appears to have foundered upon rocks of disagreement between the National Gas Council and the British Commercial Gas Association, yet these two bodies, by and large, represented the same set of gas undertakings, drew their funds from a common subscription, and in fact to quite a considerable extent comprised the same personnel. Such, on the face of it, was the laughable and lamentable situation, the while first the Board of Trade and then the Ministry of Fuel insistently demanded a unified policy for the Gas Industry of the future, as likewise did the re-housing problem, not to mention the undisguised preparations of the electricity industry for scooping the pool as soon as free trade should exist once again. There were of course clashes of personality; there were objections raised on points of "constitutions," which, where they concern Gas Industry bodies, have always appeared more immutable than that of the United Kingdom itself. But we prefer to slur over this period of the Industry's struggles which does it little credit, and to pin our faith to the hope which springs eternal.

Reference to our news columns will reveal the source of our new hope, which is born of the fact that the lion and the lamb have agreed to lie down together. We need not specify—in fact we do not know—which is which; we need not discuss just how the miracle has been brought about. We can only say that in our view the situation had become serious enough to justify clutching at a straw, but that the merger of the N.G.C. and B.C.G.A. offers the Industry something much more substantial than that proverbial act of desperation. It seems to us a veritable inspiration, backed no doubt by brilliant diplomacy, to have persuaded the ruling councils of the two bodies to meet in common counsel, to agree to continue so to meet, and to appoint a small organization committee to investigate and deal with questions of detail.

Is this it? Is this the beginning of a sane outlook on the urgent problems facing the Industry? Being dealers in facts, we recently had to record in the "JOURNAL" of a certain committee that it was "originally a sub-committee of the B.C.G.A. Executive but has now passed under the direction of the B.G.F. However, its publicity panel remains a sub-committee of the B.C.G.A., and the Association's officers have been responsible for carrying out the work with the able assistance of editorial agents appointed to help in the task." Will the new set-up signalize the beginning of the end of such meaningless jargon as this—such baby talk at a time when things surely need doing with the united punch of a massed Industry and not by a committee system run riot? And it is the system which we condemn, not the work of the particular committee, association, executive, federation, publicity panel, sub-committee, officers, and editorial agents who all appear to have had a hand in this special task. Yes, indeed, there is sweeping in abundance to be done to test the most bristly of new brooms; rebuilding to satisfy the most ambitious of organization committees. They have our best wishes. What is more important is that they shall have the out and out support of the whole Industry, and those who were present at the joint meeting at which they were constitutionally and unanimously elected assure us that the feeling of the meeting was quite patently such as to give them a flying start. Even the cynics—and their number has inevitably increased in the years of fiddle and muddle—seemed to feel that in this so obvious decision, which in spite of obviousness was a bold one in the circumstances, there was something new to hope for, something which might after all give gas its rightful place on the map of the future.

The Committee itself is a well-balanced blend of those who have had experience and whose past efforts have largely been thwarted by circumstances, with others who have clearly won recognition as being possessed of constructive ideas and of the necessary vigour for just such a task as now faces them. We welcome the strong nucleus of administrators pure and simple, but equally we welcome the presence of others who will never let them forget, in their zeal for organizing, that the future of the Industry depends upon the services it can render technically to the nation, especially upon the utilization side. It is essential that the joint council of N.G.C. and B.C.G.A. should be made, as a first step to further reform, a real forum of the Industry, where administrator and technician can meet, with equal status, and pool their ideas. We believe that in the first instance the terms of reference of the Organization Committee are to *advise* the combined Council. If this is so, we hope that one of its first pieces of advice will be that it, or some other body or bodies, be appointed for *executive* duties. The Gas Industry surely has had its fill of advice. Will it not at long last seize this opportunity, for better or for worse, of taking one big leap beyond the advising and debating stage, and really getting something done? If there is risk, the danger is not in any way to be compared with that of the indecision and drift which have threatened so long to disintegrate us.

IS THIS HE?

WE are more interested in policies than in personalities, and we sincerely trust that the Industry in general will, in this fresh start, make up its mind to eschew the sport of scalp hunting which has cost it so dear in the past. But it would be churlish not to offer our best wishes to Mr. A. E. Sylvester, who accepted by unanimous invitation the chairmanship of the new Committee. No one will fail to admire his courage, though it comes as no surprise to those of us who have had more opportunity than most of observing his work during the comparatively short time he has been in the forefront of the Industry's national affairs. It cannot be said that he has been given many opportunities of publicizing his views, as we remarked recently on the occasion of his Address to the Fuel Luncheon Club. The fact that his capacity for leadership has so quickly impressed itself as to win him this unanimous vote to his new office is all the

recommendation he can need, and should ensure for him the loyal support of the whole Industry, which he will undoubtedly require if he is successfully to accomplish the work in hand. In actual fact we believe it will be an advantage to him that he was not, so to speak, born in a gas-works. It is as an organizer that he faces his task, but he fully realizes that what has to be organized is a technical service to the community. We have his own word for it that the problem for his Committee, as he sees it, is to build an organization at Headquarters which can find its reflection in every district; to banish from the start any conception of a Headquarters which shall lay down the law to the districts. And, as the districts see such a policy developing, as we are certain they now will, they will, we are equally certain, fall in with new enthusiasm for the big march forward.

THE CRITICAL FACTOR

IN our first issue of this year we commented on lines of development which seem to lie ahead in the supply of gas and are in fact being actively investigated; and from the technical angle generally we mentioned that since World War 1 the Gas Industry has recruited into its ranks a considerable number of trained minds charged with the all-important critical factor. Though we emphasized that amid modern business conditions technical strength will not alone suffice, we did suggest that the Industry does possess technical strength, and that this fact is a cause for confidence and hope in the future. To our mind the leaven of trained men is being felt to the Industry's advantage, and we think this influence will grow.

There is ample evidence that, technically, the Gas Industry is thinking ahead, and we hope that when it becomes possible there will be no delay in accelerating, by way of increased facilities and staff, the pace of development. After the many drawn-out years of war we have lately sensed at several meetings of technical men in the Industry an atmosphere akin to frustration. This applies particularly and not unnaturally to meetings of the Junior Associations. We have heard on many sides that technically the Industry is far too conservative. We disagree. Our view is that, generally speaking, the technical side during the past quarter of a century has spurred the management side into action, or endeavoured to do so. There are, of course, shining examples to dispute this statement; insufficient, however, to our mind, to invalidate it. Firmly convinced that technically the Gas Industry is evolving on a sound basis, that of scientific accuracy, we suggest that the technical revolutionaries—and there are not a few—in the Industry should yet exercise an element of patience, that modest but potent virtue, and channel their energies and their enthusiasms into evolutionary development, bearing in mind the inevitable time lag between the birth of a new concept and its translation into commercial practice. In every industry there is this time lag. The Gas Industry should seek to lessen the time lag between concept and realization; surely it has sufficient strength to do so on evolutionary lines without excessive upheaval. Of course, of inaction, of complacency, there must be none, and there must be no purposeful dissipation of the enthusiastic spirit which breathes renewed life into any industry at every turn. We ourselves have decided views on how the Gas Industry might well develop more speedily technically if it was more concerned than it appears to be at present, or was in the years immediately preceding the war, about consumers' justifiable requirements of heat service. We could easily particularize. We are aware of the arguments that evolution is a tedious process; we appreciate the difficulties confronting the manufacturers of gas appliances in changing from current practice to other and maybe better methods; we sympathize with gas engineers in that the essence of their duty, which is unfailing continuity of heat supply irrespective of climatic condition, inevitably to some extent retards the pace of evolutionary development. We are convinced that before World War 2 the evolutionary pace set by the Industry—gas engineers and the makers of gas-using equipment—was unnecssarily slow, and that the reiteration of excuses tended to make reason of excuse where no reason existed. We are convinced that unless after World War 2 the evolutionary speed is quickened, the Gas Industry will suffer badly. Equally we believe that the Industry has the technical capacity to increase the rate of progress, and that the result will depend on the degree to which this technical capacity is encouraged and utilized; and this calls for two attributes—faith and vision—coupled with business acumen in the best sense, in the service of the consumer.

We shall need more of the technical critical faculty, but we ought to be glad that the Industry is already possessed of a good measure of it. There has been evolution during the past twenty-five years or so—too slow, as we have said, yet apparent enough. We think that a young scientist entering the Gas Industry a quarter of a century ago had a very sticky time indeed; we feel that nowadays young technologists or physicists or chemists or chemical engineers are assured of a better welcome in the Industry and should in fact have excellent prospects. They will certainly meet more of their kind and much greater sympathy in the Industry than the trained youngster—often dubbed a theorist, and often regarded with an amused twinkle in the eye by the "oh, so knowledgeable" gas engineer who had "produced the goods" for so many years, with feet firmly planted on ground, to say nothing of other parts of his anatomy—encountered immediately after we had (presumably) put Germany in its place after World War 1. This change of attitude—and we would stress once again that the technical aspect is, though obviously important, one facet only of the Gas Industry's composite drive into the future—is all to the good and inspires hope.

CHEMICAL ENGINEERING AND MATHEMATICS

IN point of fact during the past ten years or so many advances have been made in gas manufacture. Take, for example, the condensing of gas, the removal of tar fog, the cooling of water. Again, the development in plant for benzole recovery during this period has been quite remarkable; and in no sphere have we reached finality. The application of scientific thought by the technical staffs of the Gas Industry and of the manufacturers of plant has made it possible to perform the same duties with smaller plant or with less cost or with better control than was possible a few years ago. In a hundred and one ways, through technical control and the ability to interpret the results of tests and analysis, technical efficiency has been raised and economy effected. The critical and analytical factor has done much, and ought to be able to accomplish a great deal more in the future. More attention has been given to ensuring that every part of the composite gas-making plant is doing its proper share of work, and there is no doubt that apart from the introduction of entirely new processes, this is a line along which much progress is still required. This was borne out by a most able Address recently by Mr. R. F. Twist to the London Juniors, published in our issue of Nov. 22 last. There was evidence in that Address of the value of the critical factor, and we were glad that the Author called attention again to the great advance in the treatment of gas-washing problems described about ten years ago by Hollings and Silver—an instance of the application of mathematical principles.

Many times we have said that gasmaking is very largely a chemical engineering process, and we have watched with the liveliest interest the establishment of university courses in the subject. Two types of course are at present in being—the post-graduate course for students who have already obtained a degree in chemistry or engineering, and the other leading to a degree in the subject of chemical engineering. The whole scheme is discussed in a report ("Scheme for a Degree Course in Chemical Engineering") just issued by the Institution of Chemical Engineers—a report which we think is most important, and which appeals to us very much indeed. The report is there for everybody interested to read and study, and we will not go into any detail about it here. But we should like to refer to the section dealing with mathematics, the application of which "pure"

science to gas-making, distribution, and utilization is bound to become greater.

As is pointed out in the report, the application of mathematics to engineering is constantly extending, and the distinction between pure and applied mathematics is becoming increasingly artificial. Differential and integral calculus are normally regarded as pure mathematics, but the main reason for teaching these subjects is their utility as a tool in applying mathematics to engineering. We think that many branches of gas engineering now require mathematical equipment of a high order, and that those entering these branches on the technical side should have sufficient practice in the use of mathematical methods to employ them with reasonable facility. The development of high-pressure technique has obviously a bearing on this aspect.

Personal

Mr. STANLEY JONES, Assistant Engineer to the Slough Gas and Coke Company, has been appointed, subject to the confirmation by the Council, to the position of Deputy Gas Engineer and Manager to the County Borough of Middlesbrough, in succession to Mr. F. WILSON, who was recently appointed Gas Engineer and Manager to the Darlington Corporation. Mr. Jones is an Associate Member of the Institution of Gas Engineers and holder of the Institution's Diploma, and an Associate Member of the Institution of Chemical Engineers. He received his early training with the Swansea Gas Light Company, and later held appointments with the Blackpool Corporation Gas Department. In 1938 he was appointed Assistant Engineer and Manager to the Wakefield Gas Light Company, and in 1941 to his present position with the Slough Gas and Coke Company.

* * *

The Council of Industrial Design, at its inaugural meeting in London on Jan. 12, appointed as its Director Mr. S. C. LESLIE. Mr. Leslie was formerly Publicity Manager to the Gas Light and Coke Company, and was released by that Company for Government service in 1940. The Company has agreed to release him for a further three years to take up the new appointment. For some time Mr. Leslie has been engaged as a Principal Assistant Secretary at the Home Office and the Ministry of Home Security. For the next few months he will continue these duties part-time, giving the remainder of his time to the work of the Council.

Nottingham City Council has adopted a recommendation from the Lighting Committee to appoint Mr. E. HOWARD as Lighting Engineer of the City with effect from Nov. 1 last. Mr. Howard, who was Lighting Superintendent when the Council appointed the Lighting Committee to take charge of Nottingham's lighting in February last, has been acting as Chief Officer of the Department ever since.

Obituary

The death has occurred of Mr. ALFRED H. CLUCAS, M.B.E., A.I.C., Chief Assistant Chemist to the Leeds Corporation Gas Department, with whom he had 24 years' service. Well liked and respected by all who knew him, deceased was Hon. Secretary of the Yorkshire Gas Education Committee, and Hon. Secretary of the Gas Engineering Advisory Board for Yorkshire. A Captain in the Leeds Gas Department's Unit of the Home Guard, Mr. Clucas was A.R.P. Officer to the Department.

Ministry of Fuel and Power

The Ministry announce that they have appointed Mr. F. J. EDMONDS, M.Inst.Gas E., M.Inst.C.E.(Ireland), to be Regional Gas Officer, Midlands Region, in place of Mr. C. W. Jamieson, who has retired.

1945 I.G.E. Examinations

The Examinations of The Institution of Gas Engineers in Gas Engineering (Manufacture) will be held on May 26, and in Gas Engineering (Supply) on June 2.

The Board of Examiners of the Institution has decided to amend the allocation of Questions in the Higher Grade Examination in Gas Engineering (Supply).

The Paper will consist of three Groups—A, B, and C—from each of which the candidate will be required to answer one question: the fourth question may be selected from Group A, B, or C. The allocation of questions will be as follows:

Group A (2 questions): Distribution, Meters.
Group B (3 questions): Domestic Utilization, Combustion Characteristics, Theoretical Considerations.
Group C (2 questions): Industrial and Commercial Utilization.

Important Developments at Gas Industry House

N.G.C. and B.C.G.A. Executives Join Hands

In the last Press report of the National Gas Council ("JOURNAL," Dec. 20) appeared the following: "It was agreed that the next meeting of the Board should be a joint meeting with the Executive Committee of the B.C.G.A. to take place on Jan. 9."

This simple announcement may in course of time prove to have forecast a landmark in the history of the Gas Industry. Moves are afoot which may well lead to outstanding developments. This is not the time or place for speculation; we can only recount events to date according to details which have been given to us.

Around the time of the N.G.C. meeting in December, a joint committee of 10 members was appointed—5 each by the N.G.C. and the B.C.G.A.—and in brief their terms of reference were to suggest means by which more unity could be achieved within the Industry. To an exceedingly well attended meeting of the executive committees of the N.G.C. and the B.C.G.A. on Jan. 9, they reported as follows:

"The Joint Committee appointed by the Executive Committees of the National Gas Council and the British Commercial Gas Association have met and considered very fully the matters referred to them. They wish to emphasize the urgent need for greater unity in the Industry, and for making the national bodies more able to meet the difficulties which are arising both as regards the relations of the Industry with the Government and public authorities and the development of its commercial activities.

"With this in mind they unanimously recommend the following proposals for the consideration of the respective Executive Committees, and strongly urge that an immediate decision should be arrived at:

"(1) That the National Gas Council and the British Commercial Gas Association should, pending the formation of the British Gas Association, remain in existence, but that in order to achieve unity the two Executive Committees should from now on agree to meet jointly under a common Chairman.

"It is realized that this suggestion will entail a larger meeting than either of the two separate Executive Committees, but after making allowance for persons who are members of both Committees the effect is that, instead of a meeting with a maximum attendance of 60, the maximum attendance will be 86. It is not considered that this difference is sufficient to make such a meeting unmanageable or ineffective; if, however, it should prove so, steps can then be taken to reduce the number by agreement.

"(2) The joint meetings suggested should continue either until the British Gas Association is formed and the separate bodies are liquidated, or until either of the two Executive Committees desires to withdraw from the arrangement. Further, while joint meetings are held, each of the two bodies should continue to hold annual meetings."

We understand that the report went further and dealt tentatively with certain details of desirable reorganization, but the part we have quoted was adopted *in toto* as it stood. In order to conform precisely with the constitutions of the two bodies, separate meetings were held in the morning of Jan. 9, at which each body agreed separately and uninfluenced by the other to the merging of the working arrangements in this way, and later in the day the first joint meeting was held. Its first act was to elect a common Chairman for this and succeeding meetings, and the unanimous choice was Mr. A. E. Sylvester, on the proposition of Mr. Frank H. Jones, acting Chairman of the N.G.C., seconded by Mr. W. J. Sandeman, Chairman of the Executive Committee of the B.C.G.A. The next business was the formation of an Organization Committee of 12 members, composed as follows:

Mr. A. E. Sylvester (Chairman).	Col. F. J. Bywater.
Mr. F. C. Briggs.	Mr. T. Brown.
Col. W. Moncrieff Carr.	Mr. C. H. Leach.
Dr. E. V. Evans.	Mr. G. E. Currier.
Mr. S. E. Whitehead.	Mr. H. Singleton.
Mr. W. J. Sandeman.	Col. H. C. Smith.

Losing no time, this Committee was to begin its meetings yesterday. In general, it is to review all existing sub-committees of the two national bodies, both as regards personnel and functions, and to make recommendations for improvement in the whole set-up of the organization. It is to examine the question of staff, and consider how to ensure absolute unity of working on the part of the staffs of both bodies, because from now on both sub-committees and staffs would be answerable to the one joint council.

The next joint meeeting of the N.G.C. and the B.C.G.A. will be held on Feb. 16.

[*Editorial comment on p. 78.*]

Institution of Gas Engineers

The following is a Supplementary List of Examination Results, 1944:

EXTERNAL CANDIDATES.

Higher Grade Examination in Gas Engineering (Manufacture).

Class.	Name.	Town.
Second ...	Carpenter, T.	Hereford.

Ordinary Grade Examination in Gas Engineering (Manufacture).

Class.	Name.	Town.
First ...	Dann, S.	Eastbourne.
Second ...	Charles, F. H.	Gravesend.
„ ...	Sagrott, A. G.	Lowestoft.

INTERNAL CANDIDATES.

Higher Grade Examination in Gas Engineering (Manufacture).

Class.	Name.	Centre.
Second ...	Aird, A.	Glasgow.
„ ...	Hubbard, B. L.	Birmingham.

Ordinary Grade Examination in Gas Engineering (Manufacture).

Class.	Name.	Centre.
Second ...	Garthwaite, A.	Burnley.
„ ...	Little, L. H.	Manchester.
„ ...	Woolstencroft, W. A.	Manchester.

Higher Grade Examination in Gas Engineering (Supply).

Class.	Name.	Centre.
Second ...	Bromley, H.	Birmingham.

Ordinary Grade Examination in Gas Engineering (Supply).

Class.	Name.	Centre.
Second ...	Stanger, R. H.	Westminster.

Salary Scales

The Lancashire and Cheshire Provincial Council for Professional, Technical, Administrative, and Clerical Services of Local Authorities, on communication from the Association of Municipal Chief Gas Engineers and Managers (North-West District), asking the Whitley Council to negotiate a scale of salaries for such Chief Gas Engineers and Managers, have approached the various Authorities in writing with regard to arranging negotiations.

Among the number of Authorities which have already agreed to the Whitley Council negotiating a Scale for Municipal Chief Gas Engineers (including those whose salary exceeds £700 per annum) is the Corporation of St. Helens.

We understand that at least 17 authorities have already agreed the negotiations, and that though there are several refusals, the number of acceptances is in the majority.

Southport's Street Lighting

At this month's meeting of the Southport Town Council the Gas Committee reported consideration of a resolution of the Lighting Committee requesting them to reduce the price for gas for street lighting to the amount charged to Corporation departments for gas for central heating. The Chairman of the Lighting Committee maintained that the Committee had been grossly overcharged for gas, and that it got no reduction for prompt payment as did other consumers, large and small. Yet the Lighting Committee took before the war roughly 11% of the gas in a year. The cost of maintaining street lamps was paid separately, and did not come within the price charged for gas.

The Vice-Chairman of the Committee put forward the view that the Gas Committee had got things the wrong way round when they charged the Committee 2s. 6d. per 1,000 cu.ft., and other Corporation departments 2s. for central heating. This, said the Vice-Chairman of the Gas Committee, was not the whole story. The Lighting Committee was on a sliding scale of 2s. 6d. for the first 65 millions, 1s. 6d. for the next 15 millions, and 1s. 3d. for the remainder, and the Lighting Committee was the only service which had not been charged more by the recent increase. And in spite of a suggestion that, post-war, the whole of Southport should be lighted by electricity and not by the "antiquated method it has got," the Lighting Committee's proposal was rejected by a large majority.

The National Smoke Abatement Society has sent to municipal authorities a memorandum setting out the importance attached by the Government to the reduction of the amount of smoke emitted, and offering the Society's help and advice. The memorandum describes certain technical developments in heating appliances, and offers to assist housing authorities by obtaining information from manufacturers or trade associations.

KITCHEN PLANNING

Big Gas Exhibition next Month

The Kitchen Planning Exhibition to be held at Dorland Hall, London, from Feb. 5 to Mar. 3, promises to be a landmark in the annals of the Gas Industry, as it will be the first of its kind arranged by the Industry dealing exclusively with the domestic field. Nearly two years ago the kitchen research already undertaken by some of the more progressive gas undertakings and various organizations in the Industry was co-ordinated under the direction of the Domestic Heat Services Committee, and so thoroughly has the Committee applied itself to its job that it has come to be recognized in official quarters as the voice of the Industry on all matters concerning the utilization of gas in the home.

Next month's Exhibition will reveal, especially to housing authorities, architects, and builders, and also to the public, the results of the research carried out by the Committee in conjunction with its Architect Consultant, Miss Jane Drew, F.R.I.B.A. In short, it will present the Industry's proposals to the housing authorities of the country for various types of housing, with variations in size of family and amount of family income. There will be ten full-scale kitchens and "package" kitchens designed not as strictly uniform layouts, but as flexible suggestions to meet the needs of these different groups. Three will show different arrangements of standard units and furniture; two others are especially designed for lower income groups, one suitable for a house and the other for a flat. There will be one kitchen for the middle income group home and one luxury kitchen. A kitchen and bathroom combined unit shows all the plumbing and services contained in the dividing wall. Two "package" kitchens are specially designed for mobility, and the ease with which they can be erected in a small space makes them particularly suitable for prefabricated houses and for reconditioned houses or converted flats. In either case the complete kitchen could well be delivered in one or two parts and quickly erected. All the equipment is built-in to one unit, which may be fitted into a recess in one case 7 ft. wide, 21 in. deep, and 6 ft. 6 in. high, and in the other 5 ft. 3 in. wide, 21 in. deep, and 6 ft. 6 in. high. Special attention is paid to demonstrating the application of the prefabricated plumbing unit, of which several examples will be shown, particularly in a section of a house and in a model and full-scale working unit provided by the London and Counties Coke Association.

Gas appliance manufacturers and the trade organizations of many kindred industries have co-operated with the Gas Industry in the making, equipping, decorating, and furnishing of the kitchens, and many of them are showing additional exhibits of the latest kitchen and bathroom equipment. Co-operation on these lines has helped a great deal in solving the problem of scarcity of materials for the Exhibition. To a large extent the gas appliances will be of the latest 1939 pattern, although here and there prototypes of entirely new design will be shown to indicate the post-war trend. Other exhibits will include pre-war and post-war appliances for burning coke and gas, and there will be a continuous display of films, including, it is hoped, the Paramount film of the Northolt houses, and a film featuring a housewife at work in one of the kitchens designed by Miss Jane Drew. The Women's Gas Council will have a stand at which enquiries will be answered.

Distinguished heads of the Ministries concerned with post-war housing have been invited to the official opening at 11 a.m. on Feb. 5, and to a luncheon afterwards at the Savoy Hotel, and later on the opening day the Exhibition will be visited by officials of building societies, architectural bodies and others specially interested. From Feb. 6 to Mar. 3 the show will be open to the public (without charge) from 10 a.m. to 5 p.m. (6 p.m. on Thursdays), and it is expected that a large number of organized parties will be shown round. For instance, the heads of the three Women's Services have been invited, and there will probably be parties from one or more of those Services. For issue to visitors there is a 16-page booklet in colours illustrating the kitchens, together with blue-prints and details of the kitchen layouts, as well as a fuel chart for each of five typical house installations. There is also a more elaborate 64-page brochure for the use of architects, builders, and others directly interested in housing, containing illustrations of the full series of kitchens, printed in four colours, with their accompanying blue-prints, together with a special section on colour in the kitchen.

Normal national B.C.G.A. advertising will be switched to special Exhibition "copy" for the period of the show, and local Press advertising will be supported by posters, labels, and so forth. The Press will have a pre-view of the Exhibition three days before the official opening. The Exhibition was originally planned for last June and had to be postponed on two occasions, not through any fault on the part of the organizers. Times are now more favourable, and there are good reasons why the Exhibition should be an even greater success now than it could have been seven months ago.

The Staff of Darwen Corporation Gas Department has worked Saturday afternoons and Sundays for six or seven weeks to keep up delivery of coke. Orders for domestic consumers had to be discontinued on Jan. 17. Gas supplies have been maintained to all consumers.

Retort House Operation and Control

By C. A. DEAS,
Tottenham and District Gas Company

DISCUSSION

The following is our report of the discussion on the Paper given by Mr. **C. A. Deas** at the meetings of the Southern Association of Gas Engineers and Managers (Eastern District) on Dec. 13 and of the London and Southern District Junior Gas Association on Dec. 15. The Paper was published in the "JOURNAL" of Jan. 10.

Mr. **G. L. Braidwood,** in a written communication read at the Seniors' meeting, entirely agreed that the retort house was worthy of first-class lighting, and they should not hesitate to install electricity, which was more suitable than gas for the atmospheric conditions prevailing. Mr. Deas had extolled the virtues of "completely filled" retorts. He did not like this expression, and would describe an ideal charge as one which was as full as possible consistent with a slight gasway throughout; otherwise there was a loss of gas through the retort walls due to excessive pressure. As to control of conditions inside the retort, he was in favour of the most refined governing obtainable, and much depended on proper siting, reduction of friction, protection from dirt, &c. Although retorts tested by the naked eye for leakage under half-inch back-pressure might appear tight, the fact remained that brickwork retorts were inherently porous, and accurate governing paid not only from the point of view of loss of gas by leakage, but also of damage to silica by infiltration of producer gas. Valuable and reasonably accurate information as to the tightness of retorts could be obtained by injecting a measured rate of air through an orifice from a small portable blower into the retort, the ascension pipes, lids, and mouthpiece collars having first been sealed tight, and gauging the rate of loss by the pressure sustained within the retort.

While agreeing that a far shorter scurfing cycle was desirable than was often the case, one would qualify this by stressing that the ideal arrangement was, so far as possible, never to scurf the retorts quite clean, but to leave as thin a layer of scurf on them as was practicable. This left the retort on being charged in an appreciably tighter condition than when clean, and avoided a certain loss during the first few charges due to the natural porosity of the brickwork. He was particularly interested in Mr. Deas' explanation of the probable cause of the fires in one partition of his coke hopper. He had felt for some time that much wider use of the spiral chute might be made in feeding coke into the hoppers in order to prevent breakage, and it would now appear that this method was also instrumental in minimizing the risk of fires.

Regarding recirculation, the greatest benefit to be derived from this system of heating was the greatly extended life of the settings, or alternatively an appreciably higher throughput for the same life. Incidentally he asked whether when Mr. Deas referred to front walls of 11 in. instead of 14 in. he implied a reduction in the thickness of insulation.

With regard to the Author's comments on the economies of steaming in intermittent verticals, the two main considerations were the comparative costs, therm for therm, of water gas in a separate plant.

In discussing steam requirements for electrical generators, Mr. Deas had suggested that in the majority of cases they would be met by solid fuel boilers, and he referred to the use of breeze below half an inch. This introduced the subject of a long-felt need throughout the Industry generally, and that was the provision of automatic chain-grate fed boilers on all works wherever feasible, as breeze could not otherwise be burnt efficiently in boilers. It would further obviate the consumption of good coke on the works. Dealing with outlets for breeze, Mr. Deas had referred to the sending of breeze from various works to a central by-product works, but where the latter was not close to their product works the use of the breeze locally in suitable boilers would be preferable in order not to incur transport charges. As to sales to customers requiring large quantities of process steam or hot water, he imagined that in most cases there was little likelihood of disposing of breeze to local customers for their boilers, since, except in industrial districts, they would rarely possess automatic stokers. The chief difficulty in using breeze below quarter inch with coal charged to retorts was that of adequate mixing, which involved the use of expensive plant. The whole question of breeze disposal, as the Author had said, bristled with difficulties, and any other suggestions or experiences would be welcomed.

Mr. **Deas,** in reply to Mr. Braidwood, said that from his experience he could not agree that there was any loss of gas through the retort walls consequent upon completely filled retorts, and he would like to refer Mr. Braidwood to vertical retorts, which contained a very much larger charge than horizontal retorts and where no gasway was possible. The same remark applied also to coke oven practice, where the thickness of the charge was measured in feet, against inches for the horizontal retort.

With regard to Mr. Braidwood's comments on testing of retorts for leakage, the point was that the method of putting retorts under pressure, as suggested, was a ready means of determining any leakage of consequence, under everyday working conditions.

Referring to Mr. Braidwood's comments on scurfing, Mr. Deas said that from his experience it was quite impossible to scurf the retorts just sufficiently to leave a thin layer of scurf evenly all over them. One usually found that the scurf burnt off in patches, that on the crown being the most difficult to remove. He did not see how it was possible to control the operation so that one burnt the scurf off evenly all over the surface of the retort, and left a thin layer which Mr. Braidwood thought necessary.

Mr. Deas thought that under working conditions, and by maintaining the retorts under level gauge or slight pressure as he recommended, the first one or two charges were usually sufficient completely to seal up with scurf again any small cracks and the natural porosity of the retort.

With regard to front wall thicknesses, 11 in. was the actual thickness of the brickwork. Insulation, if applied, would be additional to this 11 in.

Mr. **K. C. Mead** (Gas Light & Coke) agreed that working conditions were of extreme importance. Unless they made conditions in the retort house very much better in the future they were not going to get men to work in them. He could not quite reconcile the Author's hatred of "pull," which he would agree, if done to excess, was bad, with the fact that his retorts would stand 5/10ths pressure without leakage. If they stood that without leakage then it did not matter how much "pull" there was, up to half inch. He questioned whether there were any retorts which would stand that pressure without eakage. At Beckton some years ago they took periodical tests on retorts under measured pressures, and they found there was no such thing as a bottle-tight retort. With their testing apparatus they travelled round the Company's works when people told them they had found a bottle-tight retort, but they never found one. They could get leakage on a medium tight retort up to 200 cu.ft. an hour when the retort was under 1/10th pressure. He agreed with Mr. Braidwood that it was well to leave a thin film of scurf on the retort; it was helpful in maintaining tightness. Another way of filling up cracks with carbon was to throw in some tarry naphthalene, shut the door and leave it for an hour or so. With regard to the lagging of retort walls at the front, he recalled that they had tried this, and they tried lagging the mouthpieces. The trouble was that they did it too well and burnt out the ironwork of the mouthpieces. As to the difficulty of fixing the lagging, they could get it to hang on if they used fine gauge wire netting.

High therms per ton did not necessarily mean high all-round efficiency, but the fact remained that when they were striving for higher therms per ton they had to do all these things in order to get it. With regard to the hopper which fired, he asked whether the bottom doors of the hopper were all right. Leaky bottom doors permitted a draught up through the hopper, and one would get a beautiful fire in no time. As regards the reduction of steaming in vertical retorts, there were practical limits. To cool the coke they had to keep the bottom ironwork cool, and until the contractors could offer them something better than cast iron the only way to keep it cool was to use steam. With regard to carburetted water gas plant and steam requirements, there was a large amount of process steam in the ideal works, and the balancing-up of unequal loads might be helped by the waste-heat boiler and the use of something in the nature of the Roots accumulator. Finally there was the question of breeze blending. They had a go at it at Beckton some time before the war on the coke oven plant, and their chief trouble was to get a mill which would grind the breeze properly. The Koppers Company produced a mill made by Krupps of Essen which was going to do the job, but they had continual trouble with it. They could not grind the breeze successfully to ¼ in. or below, which was, he believed, the main requirement for the job.

Mr. **Deas,** replying, said that with regard to Mr. Mead's remarks on pressure conditions inside the retort, the point was, of course, that under pressure conditions any small holes or cracks soon scurfed up, thus preventing further leakage, and in the absence of "pull" would remain tight. Under "pull" conditions, however, the ingress of the heating gases into the retort resulted in small holes or cracks becoming larger, due to what might be called the "scouring" action of these gases. When he spoke of leakage from retorts he was not thinking of tightness beyond practical limits. He was not suggesting that his retorts were bottle-tight, but he did suggest that by following the procedure indicated in the Paper they found leakages that were of any consequence. With regard to lagging the retort front walls, he had used wire netting, but he had not found it satisfactory. They had to get it on when all the pipes were in position, and they wanted some better method of attaching it. He quite agreed with Mr. Mead's remarks about the bottom doors of the hopper. The two hoppers, however, both had identical bottom doors and both probably leaked to the same extent. With one they had no trouble at all, and with the other they had fires. Trouble with fires did not occur until they had no spiral chute. The matter of cooling the bottom castings of vertical retorts referred to continuous verticals, but not to intermittent.

With regard to the matter of balancing-up the steam load on the works, he still felt that, as suggested in his Paper, there was much to be said for the works electrical requirements being provided by some other means than steam-driven generators. It was very difficult satisfactorily to utilize the exhaust steam from the electrical generators owing to the widely varying load usually found on the small or medium size of works, particularly between day and night conditions.

Mr. **J. M. Webber** (Croydon) said they had heard a good deal about gas oil sealing for governors. It was the obvious sealing medium, but they had always been frightened of the fire risk. With regard to

the insulation of the top of horizontal retort house settings, he would like to ask if it was common practice to use insulating bricks, not put on as an afterthought, but built into the settings. The use of drop catches on retort lids was something he knew nothing about. He had always had an ordinary horizontal catch, and one could see advantages, and also some disadvantages, in the drop catch. It was difficult to dogmatize on the question of electricity, but in his own case, where they were within a few yards of one of the chief and most efficient generating stations connected to the grid, it seemed ridiculous to say they should generate their own electricity on a small scale. The Author had made an interesting statement on throughput *versus* therms in the retort house, and had suggested that it paid to go for throughput and let the therms look after themselves to a certain extent. He had assumed that they wanted high throughput, which was not always the case. A year or two ago his Company ran out some figures to try to see which policy would pay best, and from their estimates it seemed that it would pay to go out for therms. The difficulty was that in any estimate of that kind they had on one side a set of figures which they knew, and on the other side a set of figures at which they guessed. Whether or not they went all out for throughput or therms per ton, he could not imagine them telling anyone in the retort house; the right thing to tell the retort house men was to aim at therms per ton.

Mr. Deas said they had for a long time used gas oil sealing in the retort house, the exhauster room, and for station governors, and he did not think there was any need to worry about the risk of fire. With regard to the top insulation of retort benches, he suggested that when the insulation was put on they needed a layer of common bricks on the top of it, or they would soon have no insulation left. The drop catch was quite a simple arrangement; as the door was closed, the catch, being vertical, simply dropped into position. There was no reason to suppose that if there was any deposit on the retort face there would be a tendency to use the drop catch as a tightening medium. If they used the drop catch they had to have the face clean, and its use assisted in maintaining the tightness of the mouthpiece doors. On the question of throughput *versus* therms per ton, he still maintained that within limits they should aim at maximum therms per retort. The last one or two therms per ton were the most expensive to obtain. If they were selling coke in the domestic market it was advisable to leave one or two therms in the coke to assist its reactivity. In any case these therms, being in the form of volatile matter in the coke, having weight, were sold as coke and therefore not completely lost.

Dr. S Pexton (Gas Light & Coke), in proposing a vote of thanks to Mr. Deas, referred to the subject of steaming retorts. While agreeing with the Author about the inadvisability of steaming horizontal retorts, he was not quite so convinced about the disadvantages of steaming vertical retorts, and particularly continuous vertical retorts. The coke consumption for the production of water gas in continuous verticals was made up as follows:

	Lb. per therm of water gas.
Consumed in retorts	4.9
„ in producers	3.5
„ in raising steam (additional to that produced via waste heat from the extra producer fuel) . .	1.0
Total	9.4

The yield of blue water gas was thus equivalent to 240 therms per ton of dry coke consumed. This result was appreciably better than that obtainable from a separate water gas plant, and the higher capital and labour costs of making water gas in continuous vertical retorts were thereby justified. The reason for the greater efficiency of water gas production in continuous verticals was associated with the utilization of sensible heat from the mass of hot coke. With intermittent vertical retorts the first 2% of steaming, reducing the calorific value of gas from 580 to 560 B.Th.U., contributed water gas at the very small expenditure of fuel of 6.5 lb. per therm of water gas, made up of 4.0 lb. consumed within the retorts and 1.6 lb. required for additional steam raising. No extra producer fuel appeared to be involved, and the coke was probably discharged at a slightly lower temperature. Increasing the degree of steaming to 8% in order to reduce the calorific value of the gas from 580 to 520 B.Th.U. involved a consumption of 10 lb. of coke per therm of water gas, made up of 4.9 lb. consumed within the retorts, 4 lb. extra producer fuel, and 1.1 lb. of additional fuel for steam raising. Increasing the degree of steaming to 20% in order to reduce the calorific value of gas from 580 to 460 B.Th.U. involved a consumption of 11.9 lb. of coke per therm of water gas, made up of 4.9 lb. consumed in the retorts, 6.7 lb. extra producer fuel, and 0.3 lb. of additional fuel for steam raising. These results in respect of intermittent vertical retorts might be summarized as follows:

Steaming.	Calorific value range.	Therms of water gas per ton of coal.	Coke consumption per therm of water gas (lb.).	Coke consumption per ton of coal (lb.).
2%	580–560	4	6.5	26
8%	580–520	11	10.0	110
20%	580–460	26	11.9	309
	560–520	7	12.0	84
	520–460	15	13.3	199

Taking the consumption of coke in separate water gas generators at 12 lb. per therm, it would appear that with greater degrees of steaming than about 8% a greater coke consumption per therm of water gas was involved than with a separate water gas generator, and to that extent he was in agreement with Mr. Deas's plea for separate water gas generators as an auxiliary to intermittent vertical retorts. Regarding the substitution of producer gas for blue water gas as a diluent, it should be realized that this considerably increased the coal requirement and the amount of coke for sale per unit of gas. Also, producer gas raised the A.T.B. number of gas distributed, and for this reason it seemed unwise to use producer gas as a diluent in summer, while reverting to blue water gas as a diluent in winter.

Mr. Deas admitted that he was not a vertical retort expert, and he had put his suggestions forward for the vertical retort people to prove them one way or the other. His remarks mostly referred to horizontals. When, however, he referred to steaming of intermittent retorts being inefficient, he intended to suggest that it was inefficient to make water gas in a retort which could be better used for the carbonization of additional coal.

Dr. Pexton's figures showed that from a purely water gas point of view the therms produced by steaming were produced efficiently. The point was, however, that it was suggested in the Paper that by reducing steaming and increasing the output of coal gas therms, and adding producer gas or blue water gas therms outside the retorts, the total output of the plant could be increased, and the resulting diluted therms would be cheaper therms than those made by internal steaming. He still felt that they would get more from their plant if they utilized the extra coke required in the producers when steaming for water gas or producer gas made in a separate plant. He thought the point about the A.T.B. was very important, but if they had producer gas dilution all the year round, the effect of adding water gas would not be so great as in going straight over from all producer gas dilution to all water gas dilution. As an alternative, steaming could be carried out during the summer months, when maximum output was not required, and in the winter months steaming could be reduced and water gas generated externally could be added as the diluent. This would have the effect of increasing the output of the plant by some 25% when necessary, with little alteration to the A.T.B. number, and would appear to be another point in favour of considering the reduction of steaming.

(To be concluded)

Retort House Chemical Control*

By P. E. GALLAHER, A.R.I.C.,

Birmingham Gas Department

ONE of the Gas Industry's biggest war problems has been to keep the retort house plant in sufficiently good fettle to meet the many increased demands of the munitions industry for gas. The problem was rendered all the more difficult owing to the lack of gasworks experience of the men drafted in to replace those required by the fighting forces, and by the depressing and stifling blackout conditions. Again, the use of strange coals, owing to the re-allocation caused by war exigencies, added seriously to the problem.

These unprecedented strains emphasized more than ever the need for sufficient skilled technical supervision, and the following notes give an outline of how this has been, and is being, met in Birmingham as regards the chemical work in the retort house. The scheme is not considered as having reached finality, but is the best that could be devised with the material and personnel available.

Since the amount of chemical supervision naturally depends in large measure on the size and type of the installation, it might be as well to mention that in Birmingham we have three large and one small works, with a total gas-making capacity of 20,500 million cu.ft. per annum, of which just over 17,500 million cu.ft. is coal gas.

The retorts are mostly of the Woodall-Duckham continuous vertical type, but include at two of the works a certain number of horizontals, which are usually at work during the winter months only.

In general, retort house chemical control operates under the supervision of the Senior Carbonizing Chemist, who is responsible for two retort house chemists on each of the three large works. The function of these chemists is to provide the information, from chemical and physical testing, which the Retort House Superintendent requires for the safe and economical working of his retort house. Both engineers and chemists work together in closest collaboration.

The duties of the chemists may be roughly divided into four categories—*viz.*, (1) temperature control, (2) daily routine, (3) non-routine work, (4) experimental work.

1. *Temperature Control.*—The highest safe working temperatures, combined with the maximum throughput of coal which can be efficiently carbonized and steamed to give the desired calorific value, should be the aim of the retort house superintendent.

A high average working temperature can only be safely maintained if fluctuations of temperature are kept within narrow limits. It cannot be too strongly emphasized that a fluctuating temperature

* From a Paper to the Midland Junior Gas Association

may become dangerously high, and do a lot of mischief to refractories in a very short time. This fluctuation can only be kept within safe limits by constant and regular attention, and in Birmingham we are developing a scheme whereby each section has its own heat attendant, who makes himself responsible for every flue in his section. These heat attendants are equipped with pyrometers, which they use several times each shift, mainly for "tuning-up" their eyes, because even a "trained" eye varies in accuracy with the prevailing conditions—*e.g.*, the degree of tiredness of the individual, the degree of outside brightness, and the degree of discomfort under which the temperatures are taken. Having frequent recourse to pyrometers enables the heat attendants to judge the larger part of their temperatures fairly accurately, merely by inspection.

The function of the chemist in temperature control is:

(1) To train and examine the heat attendant when he is first engaged, so that confidence can be placed in his judgment.

(2) To see that the heat attendant's pyrometer is registering accurately.

(3) To take daily a statistically representative set of temperatures which will give a correct picture of temperature distribution; which will indicate whether temperatures are generally correct, and which will constitute the official temperature record of the bench.

The heat attendant's and chemist's pyrometers are overhauled and checked each month against a standard pyrometer, which itself is regularly checked against the melting-point of gold.

2. *Daily Routine.*—In addition to temperature control, a daily check is made upon certain other criteria of retort house efficiency, such as gas analysis and the inspection of all the indicating and recording instruments on and around the installation.

Daily analyses are made of 24-hour period samples of the main gas stream at the outlet of the retort house—that is, the combined make of all sections. These analyses are extremely useful as indications of normal or abnormal conditions in the retort house, and the comparison with the daily analyses of purified gas gives useful information of the correct addition of air for purification. The calorific value of the gas at this point is given by a Sigma recording calorimeter supplied by a small exhauster and protected by the usual purification train. Analyses are also made of short period samples of the crude gas from two sections of the plant at each works per day, so that all sections are covered at least once each week.

The waste gas mains are inspected each day for temperature and also for any abnormalities, such as air infiltration or burning gases.

The retort houses are well equipped with indicating and recording instruments, which include temperature recorders at the inlet and outlet of all waste heat boilers, and pressure recorders on all waste gas mains, producer gas main flues, and sectional foul mains. A scheme of maintenance has been introduced to ensure that all instruments are regularly checked for accuracy and are kept in first-class working order. Without such a scheme, of course, money spent on instruments can be completely wasted, and the records that they give may prove entirely misleading.

3. *Non-routine Work.*—Most of this work is done in tuning-up inefficient sections of the plant, and this often entails complete surveys of temperatures, pressures, gas analyses, and damper measurements on a bench of retorts until conditions are improved.

The sampling of materials, such as refractories, coke, and ashes, is done as required, the testing of these samples being carried out at the Central Laboratory. Samples of coke and ashes are not normally taken as a frequent routine owing to shortage of suitable personnel. The accurate sampling of such materials from a large installation takes a considerable amount of time, and unless it is done carefully under skilled supervision, the results of the analyses may easily give misleading information. Superficial inspection of these materials is carried out regularly by the technical staff, and if any abnormalities appear, then correct samples are taken for analysis.

Producer gases and waste gases are analyzed at frequent intervals, and portable CO_2 indicators (operating on the thermal conductivity principle) have been found very useful as a rapid means of balancing waste gases with an eye to the economic use of producer fuel.

The chemists have been made partly responsible for the detailed inspection of the setting steelwork and refractories after benches have been cooled down for repairs.

This brings home to them vividly the extent of the deterioration of the refractories during the working life of the setting, and provides an added incentive to the careful supervision of temperatures.

4. *Experimental Work.*—Experimental work on carbonizing problems is normally carried out by a special staff on the large-scale Test Works. Wartime difficulties, however, have prevented full use being made of this plant, so a certain amount of experimental work has been carried out by the retort house chemists in any spare time remaining after the completion of normal testing. The particular field of work is left largely to the chemist, although requests or suggestions are frequently forthcoming from the senior carbonizing chemist and retort house engineers. As a result improvements have been brought about in existing methods and apparatus, and in some cases new apparatus has been devised. Again, despite the great amount of research that has been done on carbonization, there is still considerable uncertainty about the conditions that actually prevail in the various zones of a continuous vertical retort, and attempts are being made to increase our knowledge of these factors.

Reporting and Recording of Results.—Every attempt is made to use rapid methods of testing, and the results of all tests are reported to the retort house superintendent with the greatest possible speed, since the information is useful to him only while it is "hot." The reflection that a 15 million cu.ft. per day works produces gas at the rate of 10,000 cu.ft. per minute lends emphasis to this point.

All information is also recorded on weekly or monthly sheets, which are sent to the works engineer and senior carbonizing chemist each day and are subsequently filed. The data from all routine tests and observations are recorded graphically by the senior carbonizing chemist and his assistant.

The maintenance at Headquarters of a graphical record has proved well worth while. It provides a complete and efficient system of reference enabling past history to be consulted with a minimum of delay, and in addition it facilitates comparison between works.

Whenever possible, all related data are charted on the same graph, so the cause of any departure from the efficient working of the plant can often be traced by examination of the appropriate graph. Furthermore, slight but regular tendencies towards inefficiency or danger points are made far more apparent by a graph, and this enables corrective measures to be taken at once.

The idea of grouping the retort house chemists together into a separate unit has proved most advantageous.

Effects of Chemical Control.—In large retort houses comprising several ranges of different ages and design it is not easy to obtain the full benefits of chemical control, since a knowledge of coal throughput and the quantity and quality of the gas from individual sections is necessary before the effects of alterations can be followed completely. In such cases the ideal type of control is given by separate testing streams, such as the Test Plant at our Windsor Street Works.

The value of this form of chemical control in tuning up sections of the retort house is illustrated by the above four sets of tests which were carried out at Windsor Street just before the war.

It will be noticed that in some cases the calorific value is much higher than our declared value, but it is common on large installations to have some sections carbonizing rich coals under optimum conditions and giving high quality gas, which is later diluted by the addition of lower grade gas from leaner coals on other sections, thus giving a fixed town gas of the required calorific value.

In the column headed "Calculated to 480 calorific value" the thermal yields are purely hypothetical figures, assuming it possible to dilute a gas of calorific value higher than 480 by addition of blue water gas from increased steaming, with a corresponding increase in thermal yield. In the case of a gas of calorific value lower than 480 it is necessary to assume deduction of sufficient blue water gas of 300 calorific value to give a final calorific value of 480, and a reduction in therms. In practice, of course, it is usually impossible to conform exactly to these theoretical adjustments, and also from the point of view of economics, the reduction of calorific value resultant upon the decomposition of extra steam involves such factors as increased heat input to the setting, a lower yield of coke, and the cost of the extra steam. Neverthleless it does provide a more satisfactory basis for comparison between two sets of tests of differing calorific value, but which are otherwise standard.

Referring to the Table, test 1A, on 62 in. retorts, showed that the throughput might be too low, and an increase in test 1B led to a marked improvement in output. The therms per ton fell, but here the difference in calorific value should be noted, the potential yields at 480 probably giving a more accurate picture of the improvements brought about.

Test 2A was carried out on a section of 103 in. retorts and it was decided to increase throughput and steam, and again this led to a marked improvement in output, and in therms per ton (Test 2B).

Throughput and steam were increased still further in Test 2C, and this gave a slight increase in therms per 10 in. major axis, but a slight reduction in therms per ton, indicating that this section was now working under optimum conditions of throughput and steaming.

Test 3A on a section of fairly old 62 in. retorts gave poor results, and loss of therms by leakage was indicated. The retorts were put under slight pull at the offtakes, the proportion of steam increased,

	Actual Results.						Calculated to 480 C.V.		Temp. °C.	
Test No.	Throughput per 10 in. major axis.	% steam.	C.V.	Therms per ton.	Therms per 10 in. M.A.	H.E.V.	Therms per ton.	Therms per 10 in. M.A.	Comb. flues.	Check tiles.
1A	0.973	24.0	489	87.3	85.0	35.1	90.0	87.6	1,330	1,085
B	1.076	24.0	511	82.1	88.3	35.0	90.4	97.3	1,347	1,074
2A	1.097	10.8	510	73.5	86.1	32.8	86.1	94.5	1,326	1,046
B	1.149	12.7	509	79.6	91.5	33.0	87.1	100.1	1,326	1,065
C	1.168	13.4	511	78.8	92.1	33.0	86.7	101.3	1,318	1,076
3A	1.057	14.2	496	67.6	71.5	27.5	71.2	75.3	1,305	1,070
B	1.000	17.2	498	72.0	72.0	29.7	76.4	76.4	1,303	1,070
4A	1.067	10.2	507	69.0	73.6	29.1	75.0	79.9	1,305	990
B	0.984	12.2	492	79.0	77.7	31.9	82.1	80.8	1,320	1,070

and the flues put under slight pressure. Test 3B indicated that leakage had been reduced, an improvement in H.E.V. being shown, and, in spite of a lowering of coal throughput, the yield per 10 in. major axis was increased.

In test 4A low temperatures were considered to be the cause of poor results, and subsequent adjustments brought about the anticipated improvements. Here, again, the increase in therms per ton has been sufficient to give a higher yield per 10 in. major axis with a lower throughput.

In addition to these examples, attention should be drawn to the importance of regular crude gas analysis as a check upon the inerts content. The increased thermal yields to be obtained by preserving a low inert content and reducing the calorific value to the desired value solely by the addition of blue water gas are well worth striving for. Under normal conditions on steamed verticals, a general guide is that an increase of 1½ therms per ton can be gained for each 1% reduction of inerts content.

Hard-won improvements in the retort house, however, can easily be nullified by the careless admission of unnecessary air for purification. Here again 1½ therm per ton can be lost for each 0.2% of excess oxygen, and, as pointed out before, a daily comparison of gas analyses before and after purification proves very useful.

Regarding retort house instruments, the modern trend in technical control is towards the adequate equipment of all plant with indicating and recording instruments. Much of the benefit to be expected from such improved methods of control will be lost unless the conditions under which the instrument will have to operate are borne carefully in mind during designing. For example, much trouble has recently been experienced with our offtake pressure recorders owing to corrosion of the aneroid. The bellows are in the base of the instrument, and support the pen arm, on the upper end of which is mounted the pen. Any slight excess of ink applied to the pen runs down the arm and corrodes the bellows. By merely inverting the instrument and having the pen arm depending from the aneroid at the top this trouble would not arise.

The need for an adequate number of accessible gas sampling positions should be stressed.

The task of tracing air leakages into waste gas mains and connecting mains would be greatly facilitated by the provision of a series of conveniently disposed sampling holes for the purpose of obtaining gas analyses and pressure readings.

Finally, the positioning of platform levels in respect of combustion flue sight holes and operating controls is deserving of much more consideration. This subject has been a topic of discussion among designers, engineers, and chemists for many years, and all are agreed that accessibility of sight holes, &c., together with reasonable conditions for the operating personnel, are of the greatest importance; yet one still finds modern installations on which the most important combustion flue sight holes do not permit of anything like reasonable conditions of inspection. Such conditions cause unnecessary fatigue, and cannot do otherwise than reduce the technician's capacity for carrying out his duties.

DISCUSSION

Mr. **A. R. Myhill** (Birmingham) said the speaker had advocated what in Birmingham was an experimental method of staffing the retort house chemical control. It had grown from very small beginnings. Previous to the war in each works in the Department the chemical part was run by the works chemist, and he had as an assistant one retort house chemist. In that way they were more or less isolated, but with the present arrangement there was more collaboration and experience was pooled. As to the graphing of data, that might seem to be a luxury, but he had found that the daily graphing of gas analyses, temperatures, pressure of steam, and so on had been most useful when trying to trace troubles which occurred. One could go back and see tendencies far better from a visual graph than from looking at a mass of figures. He could recommend any of them who had charge of chemical works to try this method of graphing.

Mr. **F. Harvey** (Bilston) asked what was considered the limit of the number of heats to which one man could attend in a day. On smaller works the technical assistants were generally responsible, and while a man might find time to get round 32 retorts, it was better for him to do 16 and for another man to be put on to do the other 16.

Mr. **Gallaher:** Do you mean merely the reading of temperatures, or does that include adjustments?

Mr. **Harvey:** Supervision and adjustments.

Mr. **Gallaher** said it depended largely upon the type of installation and the number of temperatures to be taken on each retort. The position of the sight holes and operating controls was an important consideration. Given ideal conditions of cleanliness, ventilation, and disposition of sight holes and controls, 100 retorts might not be too many, but under other conditions half-a-dozen could be plenty. The fewer retorts a man had to look after the greater would be the efficiency of the retorts. Generally speaking, about 16 retorts per man would seem to be a good figure to aim at.

Mr. **Deacon** stressed the importance of having plenty of heat attendants who took temperatures and made their own adjustments, under supervision.

Mr. **J. A. Tomes** (Stourbridge) proposed a vote of thanks to the Author, and Mr. Tidball seconded.

Gaseous Hydrocarbons and Research

The following are the written replies to the discussions on their recent Addresses ("JOURNAL" of Nov. 29 and Dec. 6) by Dr. F. J. Dent and Dr. J. G. King.

Dr. Dent: Dr. Underwood has emphasized the difficulty of getting rid of reaction heat when coal is treated in the form of a fuel bed. With the ingoing hydrogen recuperating heat from the solid residue and the outgoing gases depositing heat as they pass through the fresh coal, conditions are, of course, the reverse of those required for ready heat dissipation. The consequences are described in the Paper; there is a limitation of hydrocarbon production. What is, as yet, unknown is whether or not the limitation is sufficiently severe to prevent enough hydrocarbons being obtained, and this is one of the main questions to be settled in the semi-scale plant.

Dr. Underwood continued with the possibilities of using coal in the pulverized form. Without doubt, there is much interesting work to be undertaken in that direction, for the disposal of reaction heat will obviously be simplified. The probable advantages of pulverized fuel are not unaccompanied by disadvantages, and one of these is that it is not easy to design a plant for pulverized fuel which will avoid the exposure of volatile matter to the full reaction temperature. Thus, while experiments on pulverized fuel are being put in hand, it is considered that the present technique of treating coal in a fuel bed requires full examination.

The plant diagrammatically illustrated in fig. 9 ("JOURNAL" of Oct. 18) was purposely arranged with the hot zone near the gas offtake, in order that the skin of the incoming coal would be hydrogenated as rapidly as possible. It is hoped, however, that the gases in passing through the coal will be sufficiently cooled to avoid undue pitch troubles, although a mechanical scraper in the offtake would probably be required. The figure should, however, only be taken as illustrating a principle of design, and not necessarily as the basis of an engineering drawing.

During carbonization in a laboratory reaction tube, the yield of hydrocarbons is considerably enhanced by passing a gas containing hydrogen through the coal even at atmospheric pressure. On the large scale conditions are rather different. It becomes difficult to obtain an even distribution of gas flow across the section of the charge, and there is a tendency for gas to bypass up the sides. In addition, what is gained by the hydrogen atmosphere is likely to be offset to some extent by less complete cracking of the tar vapours. Introducing blue water gas or hydrogen at the base of a continuous vertical retort, as Mr. Robinson and Mr. Rioch suggest, should, however, be more effective than the steam normally used, and would be an interesting subject for investigation.

Concerning the catalytic synthesis of methane, while it is true to say that by increasing the pressure gas of a given calorific value can be prepared with a higher catalyst temperature, it does not necessarily follow that such higher temperatures need be used. Catalysis could be carried out at 250°–300°C., whatever the pressure, and the rich gas obtained then diluted to the required calorific value. The temperature of the catalyst would not effect the operation of the water gas plant, and this would remain as at present. As Mr. Robinson suggests, it is quite likely that a complete gasification unit based on hydrogenation and high pressure gasification would require the generation of steam in external boilers. Part of the residue from hydrogenation could be set aside for this purpose, or else a separate supply of slack coal could be used.

The whole question of sizing the fuel prior to hydrogenation is regarded as open. The evidence from the experiments in the 7-in. vessel is not regarded as conclusive for the large scale where, in particular, the effect of having a continuously operated retort might be considerable.

Dr. **King**: In my remarks I placed special emphasis on the fact that the Gas Research Board had a comprehensive programme of research which they were hoping to bring into action within the next few years. I am gratified to find that the speakers have taken this point, and have realized that the field is much greater than is represented by the relatively few programmes which are now active.

Dr. E. W. Smith has drawn attention to the proper balancing of research in the Industry, while Mr. Richards has pointed out that co-operative research making use of all the means available is the only real method of attack. I agree entirely with both views. The final programme must be fully balanced, with long-term work, *ad hoc* research, and co-operative research and development.

In his written contribution Mr. Hunter Rioch is worried by the suggestion that the Board may limit its work too rigidly to fundamental work and will not proceed in the direction of development. I think perhaps he has not fully understood what was intended in the report of the Chairman of Council in 1943. The work done directly by the Gas Research Board staff will certainly be mainly of the fundamental type, but the Council and the Director will also make it their business to see that discoveries which emerge are followed up by that part of the Industry which is most fitted to deal with them. In some cases the development may be done by the Board's staff, but Mr. Rioch may be assured that, whatever the means employed, it will certainly be done.

Mr. Richards has drawn attention to the wisdom of bringing research

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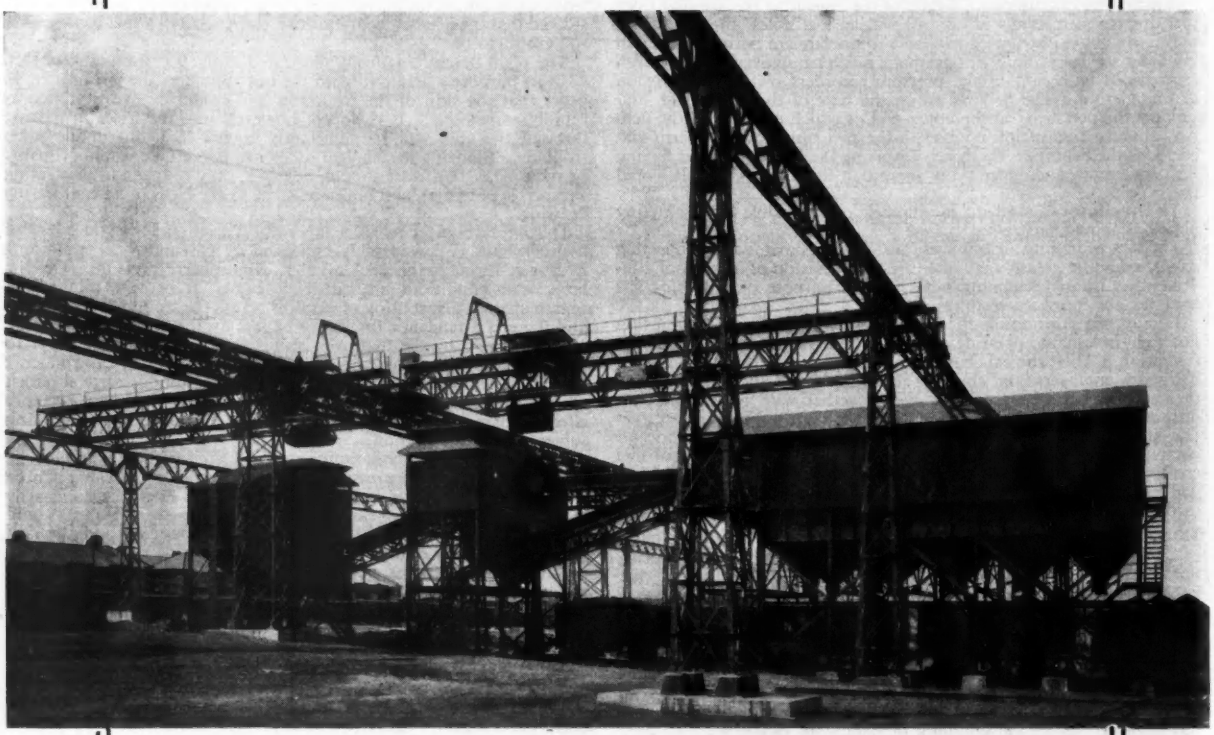

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results directly before District Associations. I have already adopted this as a principle, and will always endeavour to present pictures of our research work to associations in order that wide discussions are fostered.

Mr. Battersby has mentioned the question of finance, but I feel that this does not arise at present. It is not possible under war conditions to spend more money, and I have no fears but that sufficient money will be forthcoming as required when peacetime conditions return.

Finally, I wish to thank the President, Mr. Collins Garrard, for the nice things he has said about our research programme, and to assure him that the most important consideration before the G.R.B. is to make the application of research in the Gas Industry a very real effort.

The Local Government White Paper

[*Communicated*]

Local government and the Gas Industry have many problems in common, and in the light of all that has been said and written about redrawing the gas map of Great Britain it is interesting to look at some of the proposals for reform which the Minister of Health has put forward in his recently issued White Paper on Local Government in England and Wales during the period of reconstruction. As a matter of fact the document makes no specific reference to gas, but it must be remembered that nearly a third of the gas undertakings in this country are municipally owned, and a little over a third of the total gas output comes from municipal works. To that extent the Gas Industry is directly concerned with local government reconstruction; apart from which, even where gas is supplied by companies with or without competition from municipal electricity, the Industry is likely to be intimately affected by any changes that are brought about.

There has been as much loose talk of regionalization of local government as there has been about regionalizing gas supply, but the report says it is inexpedient to contemplate drastic innovations, such as the construction of regional bodies, in reshaping the local government system to fit post-war needs, and suggests that it is better to rely on the existing structure, based on the county and county borough, with appropriate machinery where necessary for combined action. The White Paper proposals, which are the outcome of a frank exchange of views with the various local government associations, are not to be regarded as decisions, but they are made public in the hope that it will be possible, in the light of the discussion of them in Parliament and elsewhere, to introduce early legislation which will be largely agreed.

The present system of local government in England and Wales (outside London) consists of (*a*) a one-tier structure in the county boroughs, each of which has an authority responsible for the administration of all local government services within its area; and (*b*) a two-tier structure in the administrative counties, responsibility for the various services within the county being allocated by statute to the county council or to the councils of "county districts," that is, of non-county boroughs and urban and rural districts. In the case of certain services administered by the county district councils, notably those of housing and water supply, there has been a tendency in modern legislation to give to county councils some power of co-ordination and oversight coupled with powers of financial assistance. Throughout the whole field provision exists, and is extensively used, for joint action by local authorities of all types through the medium of joint boards or joint committees where the nature of the service demands a wider unit of administration. In view of suggested wider administrative areas, interest and apprehension have been aroused by one important wartime institution—the creation of civil defence regions and the appointment of regional commissioners. This change did not alter the system of local government itself. Its purpose and effect were not to alter, or transfer to the State, any of the functions of local authorities, but to decentralize the machinery of Government Departments in relation to civil defence and other wartime services.

The system was established because it was thought that conditions might arise in which it would not be possible to maintain communications between the seat of central Government and the rest of the country. Although, happily, these conditions have not arisen, there is no doubt that the decentralized Government machinery provided by the regional system has proved an effective instrument to meet the urgent needs of war, and that the Commissioners have formed a valuable link between the Government and local authorities. But there is no question of maintaining the system in peace. Some Government Departments, whether responsible for services directly administered or concerned with services administered by local authorities, will no doubt find it advantageous, or indeed necessary, to maintain and perhaps develop their own localized staffs and offices, but it can be stated definitely that it is no part of the Government's policy in dealing with post-war reconstruction to perpetuate the system of regional commissioners.

The report says there are various alternative ways in which it would be possible to plan or administer over wider areas services which cannot be planned or administered efficiently within a single county or county borough. The alternatives include nationalization, regionalization, and the creation of joint authorities for planning or for executive purposes. The possibility is not ruled out altogether of transferring certain functions to the State if on merits a good case can be shown for this course. The Government, however, are opposed to any general policy of centralizing services hitherto regarded as essentially local; nor do they believe that a solution is to be found in the creation of regional authorities. This system would involve the establishment of directly elected bodies to administer certain services over areas larger than those of counties and county boroughs, and would introduce a two-tiered system in county boroughs, and possibly a three-tiered system in counties. This is a matter on which the local government associations have shown a unanimity in marked contrast to the diversity of their views on other possible lines of development. The Government consider, therefore, that where co-ordination of services between two or more areas, whether counties or county boroughs, is necessary, it should be sought by the established procedure of joint boards or joint committees.

As regards the adjustment of local government areas, the report says that the system of counties (with county districts within the county) and county boroughs cannot be static. It must be capable of adaptation by redrawing of frontiers to meet changing conditions; and the adjustments and alterations must be such as to make, as far as possible, areas of each type satisfactory units of administration. For carrying out adjustments where needed there must be effective machinery for periodic review. That machinery must command public confidence and must work smoothly and expeditiously. The scheme outlined aims at devising a procedure under which all proposals for adjustments, whether of the boundaries of counties and county boroughs or county districts, will be examined by a single body, whose decisions will be subject, in appropriate cases, to Parliamentary review. A secondary object is to devise a procedure free from the disadvantages which, in the view of the Royal Commission, were inherent in the system of borough extensions by Provisional Orders made by the Minister. The creation and extension of county boroughs is a matter in which the formulation of any general directions is difficult. The problem, though familiar, is one which under post-war conditions is likely to assume new aspects. The aim must be to secure the best possible design of local government areas in the future, and not merely to adjudicate on the merits of conflicting claims. In the past applications for county borough extensions have not usually been made until the area claimed has been at least partially developed. If the case proves to be one in which an extension of the borough is justified, the operation can be effected with much less disturbance to county and county district finance and administration if it is timed to take place while the development is still in the future, and the necessary services still remain to be built up. Such a course has the additional advantage of securing that most or all of the services of the area are from the outset planned by the authority which will administer them. The Government accept the general principle that the normal interval between alterations of local government areas should be not less than ten years.

In brief, the main suggestions in the White Paper are that all proposals for adjustments of local government areas should be examined by a single body, whose decisions will, in appropriate cases, be subject to Parliamentary review. This body would be a Local Government Boundary Commission invested with powers embracing those of the county council and Ministry of Health relating to county reviews under the Local Government Act, 1933. The creation and extension of county boroughs and, in proper cases, the reduction of the status of a small county borough and the union of contiguous county boroughs, and also of some of the smaller administrative counties would be within the scope of the commission, subject to safeguards. The functions of the commission would be executive and not advisory. A small body of not more than five members is contemplated. Local government in London and the special problem of the county of Middlesex would be excluded from the sphere of the commission. Steps are to be taken to appoint an authoritative body to advise the Government on local government problems within the county of London. In view of the effect of war damage on the county, the Government regard the institution of this enquiry as a matter of urgency.

Whether, and if so to what extent, the proposals in the White Paper will affect the structure of the Gas Industry remains to be seen, but it is obvious that where boundary alterations vary from existing areas of gas supply there will be a new overlapping of company and municipal interests. We recall that the Gas Industry's Planning Report declared that "the general transfer of company undertakings to municipal ownership (or *vice versa*) would of itself solve few, if any, of the integrating or other problems of the Industry." It may well be that a measure of give and take will be required, whereby an enterprising company can take over a less efficient municipal undertaking in one area, and a go-ahead council can acquire a less energetic company undertaking in another. It may be, too, that the system of joint boards, such as those at Stretford and Accrington, will be adopted where circumstances are favourable.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

Malta and Mediterranean Gas Company

The Annual General Meeting of the Malta and Mediterranean Gas Company, Ltd., was held at the Offices, 5, Great Winchester Street, Old Broad Street, London, E.C. 2, on January 9. Mr. ARTHUR M. PADDON, M.Inst.C.E. (Chairman of the Company), presided.

The MANAGING DIRECTOR AND SECRETARY (Mr. G. Murray Burton) read the notice convening the meeting and the Auditor's Report.

The CHAIRMAN said: It is a little difficult to observe all the formalities of a general meeting in view of such a sparse attendance, but I would like to assure you that we are always glad and happy to see you with us on these occasions. The first point I have to mention is that you will miss one of our Directors, and it is with deep regret that I record the death of Brigadier-General Goland Vanholt Clarke. He was a man of very considerable experience, and he always had something of the family sagacity of the Clarkes, who, as we all know, have the reputation of being good business people, and we are very sorry indeed to lose him. You will see that we have replaced him by the appointment of Mr. George Evetts, and that ought to be a source of congratulation to the proprietors when they see it in the report. His position in the Gas Industry to-day is almost unique, and we are very fortunate indeed in having him with us.

With regard to the Accounts themselves, they refer to a fragmentary period; that is to say that they do not cover a complete twelve months of operation. For a period of from six to nine months in the year covered by the Accounts we have been making gas, but otherwise we were restricted from doing so, and therefore any comparison or reference to figures is quite nugatory and would serve no useful purpose. We have the stark fact that we have a loss on the year of £3,847 odd, but I am able to say that the condition of affairs which occasioned that loss has passed, and unless anything very unforeseen occurs, the present period will undoubtedly yield a profit, sufficient, I hope, to eliminate the debit shown on the previous year's working. From the reports we get, things are certainly improving. We had our Engineer and Manager, Mr. Ferguson, over here the other day, and he was able to give us close and particular information about all that had transpired in Malta, and what was expected in the future, and he has now gone back. The staff in Malta has been supplemented by an officer who will keep the clerical and financial side of the Company in complete order. You will realize that after all we have gone through there must be considerable disorganization and confusion, all of which has to be straightened out, physically, technically, and financially.

The prospect is decidedly better than it was six months ago, or indeed at any time in the period to which the Accounts relate. I would refer again to our investments, which you will see from the balance-sheet have a book value of £32,008, and a valuation of £51,187, against a total capital issue of just over £44,000. I do not know whether that can be preserved in its present relation, but I do not think the margin will be seriously disturbed during the coming period. If we all live through this period of anxiety and disturbance, I hope we shall have a much happier state of things to report in the future. I think that is all I can say, and I will now move that the Report and the Accounts annexed thereto be and are hereby approved and adopted.

Commander HYDE C. BURTON: I have pleasure in seconding the Chairman's resolution. I had the pleasure of visiting the works in Malta some four months ago. Of course Malta has suffered terribly, but the condition of the works is surprisingly good on the whole, considering all we have gone through.

Mr. A. D. DODGSON: Are we to understand that considerable repairs have already been effected to the Company's installations in order to allow the amount of trading mentioned in the accounts to be achieved?

The CHAIRMAN: Yes, as far as the works are concerned they are being put in order, and they are capable of putting out more gas than they are doing. With the exception of a short period on one occasion, supplies of gas never ceased through the works being put out of action, but they were suspended by the arbitrary decision of the Government. As soon as the restriction was removed certain elements of reconstruction were carried out, and I think we can say we are ahead of the demand.

Mr. DODGSON: Has trading been restricted by damage to mains?

Commander BURTON: Restrictions have been due partly to damage to mains and partly to damage to houses generally; some of the towns are just not there.

The CHAIRMAN: As an instance of what we are doing, we are now endeavouring to complete the main to the Dockyard, which will give us a considerable accession of business. We are not at present supplying gas in that particular direction. They were previously one of our good customers and a very important one indeed, more than in a business way.

The Report and Accounts were then unanimously approved and adopted.

The CHAIRMAN: I now move that Mr. Frank Harding Jones be and is hereby re-elected a Director of the Company. Mr. Jones is one of the most overworked men in the Gas Industry at the present time. He is President of the South Metropolitan Gas Company, and the Government make continued demands upon him. I may say he is not affected any more or less than the rest of us by the little note printed in red in the accounts to the effect that as from June 30, 1942, the Directors have voluntarily reduced their fees to £5 each per annum.

Mr. GEORGE EVETTS seconded and Mr. Jones was unanimously re-elected.

The CHAIRMAN: We would like to send a message out to Malta complimenting them on the way they have conducted our business. I am reminded of something like Dr. Johnson said about the dancing doll. The important thing was not whether it danced well or badly, but that it danced at all. The wonder is that we kept going in any way whatsoever, and it was only done by a considerable devotion to duty on the part of Mr. Ferguson, the Engineer. You know the old saying, "Like master, like man," and if he had failed you would have had no success at all. And I may say also that our friend Mr. Murray Burton has had a very anxious time indeed, and it has not been easy to get all the information to enable him to prepare such a statement as we have before us. That being the case I think we all agree unanimously to send the best thanks of the Board and the Shareholders to the staff in Malta. The Managing Director will draft our expression of thanks, and I hope he will accept for himself our recognition of his very able efforts.

On the motion of Mr. DODGSON, seconded by Commander BURTON, Mr. William Cash, jun., M.A., F.C.A., was unanimously re-elected Auditor.

Mr. DODGSON: There is one man to whom you never make eulogistic reference, and that is the Chairman of the Company, and I should therefore like to do so both on my own behalf and on behalf of the Shareholders.

The CHAIRMAN: Thank you very much indeed. We have a good executive and we have all had a good schooling in the Industry. Some have had Mediterranean experience. Mr. Evetts knows both India and the Mediterranean intimately, and he has also had some experience of South America. That brings us to the end of our meeting.

Diary

Jan. 26.—London and Southern District Junior Gas Association: Gas Industry House, 6.30 p.m. Paper by J. H. C. Bates.

Feb. 1.—I.G.E. Board of Examiners: Gas Industry House, 11.30 a.m.

Feb. 7.—Southern Association of Gas Engineers and Managers (Eastern District): Gas Industry House, 2.30 p.m. Paper by T. Brown (General Manager, South Suburban Gas Company), "Housing Developments and the Gas Industry."

Feb. 23.—Institute of Fuel: Joint Conference with National Smoke Abatement Society.

Feb. 24.—Manchester and District Junior Gas Association: Address by Dr. J. G. King, Director of the Gas Research Board.

Feb. 28.—Institute of Fuel (North-West Section): Conference on Preparation of Coal. Engineers' Club, Manchester, 10.30 a.m.

Mar. 21.—Southern Association of Gas Engineers and Managers (Eastern District): Gas Industry House, 2.30 p.m. Paper by J. E. Davis (South Metropolitan).

The Name of Stephenson Clarke and Associated Companies, Ltd., has now been changed to Stephenson Clarke, Ltd.

Newton-le-Willows U.D.C. has approved of the Lancashire and Cheshire Provincial Council negotiating a scale of salaries for chief gas engineers and managers with the Association of Municipal Chief Gas Engineers and Managers.

Mr. **Morrison,** Bolton Lighting Superintendent, states that since street lamps were relighted three months ago the work of his Department has been handicapped by 365 panes of glass having been broken, and that through this damage lamps are not in use which would otherwise have been illuminated.

Complaints have been made by a number of Scottish Town Councils that the residents in their areas are adhering so strongly to the earlier blackout arrangements, despite the relaxation, as to interfere with street lighting plans. One main advantage which had been anticipated by many of the smaller centres was that the greater light from private windows, through translucent blinds, would assist in limiting the amount of street lighting required. Most householders in these centres are still using full blackout, for the simple reason that they cannot replace blackout with new curtains at a reasonable cost.

The South Australian Gas Company set up new records in the sale of gas and by-products in the year ended June 30, 1944, and £6,823 was added to the profit balance carried forward, against £2,338 for the previous year. Income increased by £40,585, of which £38,839 represented extra income from gas sold. Consumers increased by 1,756 to a total of 72,880. At the annual meeting, at which a dividend of 5% was declared, Mr. F. G. Scarfe, Chairman, stated that although gas outputs had exceeded all-time records, the Company had a satisfactory margin of carbonizing capacity. Showroom receipts had been restricted by the Government embargo on the sale of appliances, but it was evident that there would be a tremendous post-war demand for all types of gas-consuming apparatus, particularly domestic. In addition to gas cooking, water heating, and room heating, gas refrigeration would be prominent, and in these and other activities research was playing a leading part. Mr. Scarfe added that 152 employees of the Company were in the fighting forces.

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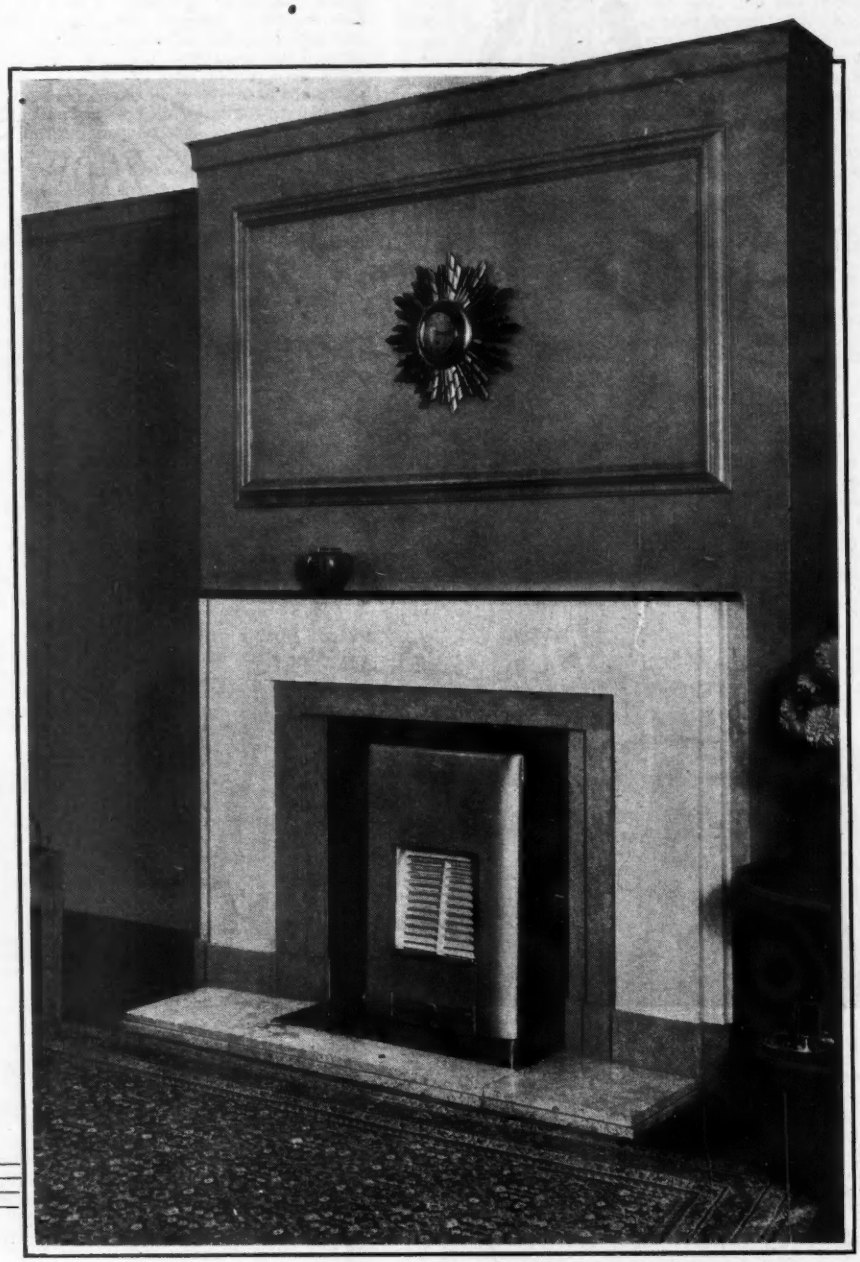

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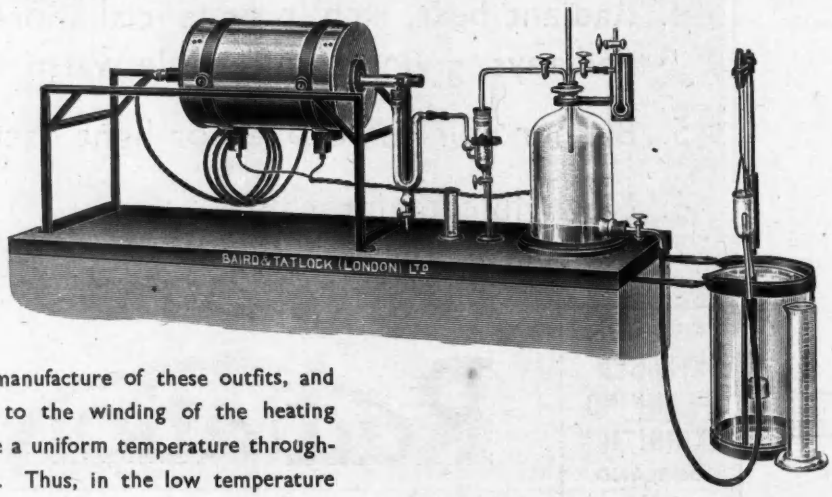

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GAS PRODUCTS PRICES—STOCKS AND SHARES

The London Market Jan. 15.

There are no changes to report in the prices of Coal Tar Products.

A Government Order came into effect on March 1 controlling the price of Benzole and Coal Spirit and replacing the Control of Coal Tar Naphtha and Xylole Order, 1943.

The Order is known as the Control of Benzole and Coal Spirit Order, 1944 (S.R. & O. 1944, No. 172).*

By this Order the price of Motor Benzole is fixed at 2s. per gallon. The Order also lays down the method of evaluating Crude Benzole.

The Order also calls for periodical returns to the Ministry of Fuel and Power from all producers of Crude and Refined Benzole.

In connexion with the Coal Tar products market, the Government Order designated the Contol of Toluene (No. 4) Order, 1944 (S. R. & O. 1944, No. 170), contains an amendment of the Control of Toluene (No. 3) Order, 1943.

Attention is called to a new Government Order, which amends the price of Toluene as from Sept. 1, 1944. The Order is entitled, The Control of Benzole and Coal Spirit (No. 2) Order, 1944 (S. R. & O., No. 988).

The only change in connexion with the prices of Coal Tar Products refers to Naphthalene. A new Government Order, entitled the Coal Tar Products Prices (No. 2) Order, 1944 (S. R. & O. 1944, No. 1051), allows increases in the maximum prices for all forms of Naphthalene. The new Order came into force on Sept. 22, 1944.

* Slightly amended by Control of Benzole and Coal Spirit (No. 2) Order, 1944, which amendments came into force on Oct. 1.

The Provinces Jan. 15.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 2s. to 2s. 2½d., pure, 2s. 9d. (now controlled by S. R. & O. 1944, No. 988, operative from Sept. 1, 1944. Benzole and Coal Spirit, also Coal Tar Naphtha and Xylole, are now controlled by the Control of Benzole and Coal Spirit Order, 1944, dated Feb. 18, 1944, S. R. & O. 1944, No. 172, operative from March 1, and S. R. & O. 1944, No. 988, part 1, operative from Oct. 1, 1944. Carbolic acid, 60's, anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.), and strained anthracene oil controlled by the Coal Tar Products Prices Order, 1943, dated Oct. 20, 1943 (S. R. & O. 1943. No. 1528), operative from Nov. 15, 1943, Naphthalene now controlled under S. R. & O. 1944, No. 1051, operative from Sept. 22, 1944.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland Jan. 13.

Deliveries are proceeding rapidly, with prices unchanged. Refined tar*: Yield to distillers is 4½d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality,* 5½d. to 6½d.; hydrogenation oil,* 5¾d.; low gravity or virgin oil,† 7¼d. to 7½d.; benzole absorbing oil,* 6½d. to 8d. per gallon. Refined cresylic acid* is 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 6½d. to 7d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 2d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

Markets had a good week. The volume of business was fully maintained, the bulk of the turnover being in gilt-edged and industrials. The latter recorded larger appreciations than for some time past, and brokers are being hard put to it to find the necessary supplies. Far Eastern issues benefited on the Pacific war news.

There was a steady flow of business among gas stocks and shares, and prices with few exceptions remained very firm, with a rising tendency. In the Official List a few small upward movements were recorded, the only fall of note being a drop of 4 in Alliance and Dublin. At the local Exchange Newcastle consolidated closed 2 better, and after a long period at the old prices the margin of the two Malta and Mediterranean preference stocks narrowed to 5 points.

The following is the full list of changes during the week:

PROVINCIAL EXCHANGES

Sheffield Cons.	149—151	+2
Weston-super-Mare 4 p.c. Deb. (*x.d.*)	99—101	Jan. 2
Ditto 7½ p.c. Deb. (*x.d.*)	145—150	,,

OFFICIAL LIST.

Alliance & Dublin	109—114	−4
Associated Gas & Water Ord. ...	22/9—23/9	+−/3d.
Cape Town 4½ p.c. Cum. Pref. ...	5⅛—6⅛	+⅛
Commercial Ord.	68—73	−1
Gas Light 4 p.c. Pref....	101½—104½	+½
Ditto 3½ p.c. Red. Pref. (*x.d.*) ...	100—103	Jan. 8
Ditto 3½ p.c. Red. Deb.	98—101	+1
Imperial Continental	110—115	−1
Oriental (*x.d.*)	143—148	Jan. 8
South-Eastern Gas Corporation Ord.	22/—23/−	+−/3d.

SUPPLEMENTARY LIST

Barnet 5 p.c. Deb.	120—125	+2
Malta and Mediterranean 7 p.c. 1st Pref.	45—50	+2½
Ditto 7½ p.c. 2nd Pref.	45—50	+2½

TRADE CARDS

FULL particulars of these spaces can be obtained on application to the Publishers. They are designed principally for the use of the firms whose display advertisements cannot be included owing to paper rationing.

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Lyndon Toolworks, West Bromwich. T/N 0517 (2 lines).
"LYNDON" and "EGA-KUT"
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Pressure and Vacuum Recorders and Indicators
Full Scale or Inclined Gauges
WALKER, CROSWELLER & CO. LTD.
CHELTENHAM, GLOS. Cheltenham 5172

WEST'S GAS IMPROVEMENT CO. LTD.
Miles Platting, Manchester 10. T/N Collyhurst 2961 (5 lines). T/A Stoker, Manchester. London Office: Columbia House, Aldwych, W.C.2. T/N Holborn 4108-9. T/A Wesgascoe Estrand.
WEST'S CARBONIZING PLANTS.
GLOVER-WEST VERTICALS. WESTVERTICAL CHAMBERS.

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LOCOMOTIVES of all Sizes and Gauges specially constructed for Main and Branch Lines, Contractors, Docks, Gas-Works, Collieries, Iron-Works, Brick and Cement Works, &c. Locomotives of various sizes always in progress for early delivery.

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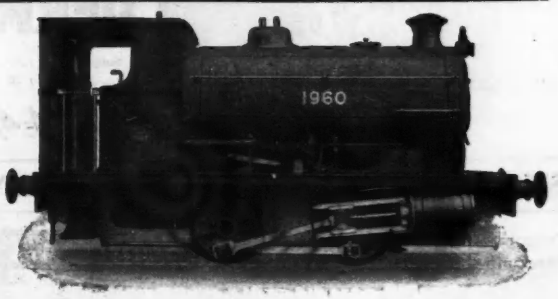
London Representatives: FERGUSON & PALMER, 9, Victoria St., Westminster, S.W.1



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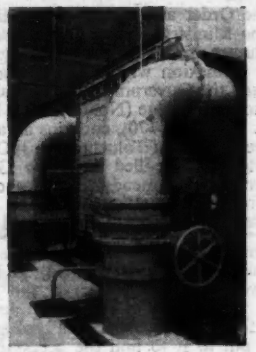

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FIRTH BLAKELEY SONS, & CO., LTD. Vulcan Ironworks, Church Fenton, Yorks.

MANUFACTURERS of Gas-holders, Tanks, Condensers, Purifiers, Scrubbers, Washers, and every description of Gas Plant.
Sole Makers of the "P.M" semi-water Gas Plant.
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WANTED.—Copy of A. T. Gilbert's "Gas Meters." Manager, East Hull Gas Company, Saint Mark Street, Hull.

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CLOCKWORK Controllers, Time Switches, Clocks and every kind of clockwork appliance used in connection with Gas REPAIRED quickly by skilled staff.
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APPLICANTS for the post of ASSISTANT ENGINEER AND MANAGER to a 200 Million Works advertised under No. 9392 are hereby THANKED and informed that a short list has been prepared from which an appointment will shortly be made.

MAINTENANCE FITTER required. Must have thorough knowledge of F.A. and Jenkins D.B. Charging Machines, and be capable of carrying out maintenance of coal and coke conveyors, compressors, exhausters, and coke screening plant. Wages 2s. 1.98d. per hour. House at moderate rental available if required.

Applications, stating age, and giving full particulars of past and present employment, also position under National Service Acts and Essential Works Order, to General Manager, Mossley and Saddleworth Gas Company, Ltd., Roaches, Mossley.

JUNIOR CHEMIST

APPLICATIONS are invited for the post of ASSISTANT CHEMIST.

Candidates should state Age, Experience, and Qualifications, supported by recent Testimonials; also position under the National Service Acts. Salary according to ability.

Applications to be received not later than January 26, 1945, by the General Manager, Bath Gas Company.

COUNTY COUNCIL OF THE COUNTY OF LANARK

(GAS UNDERTAKING)

DISTRIBUTION ENGINEER

APPLICATIONS are invited for the Position of DISTRIBUTION ENGINEER in the Gas Undertaking.

Candidates must be duly qualified in all branches of Gas Supply and must possess recognized technical qualifications. Candidates must also have thorough technical knowledge and sound practical experience of high and low pressure distribution, and of the general application of gas for domestic, industrial and commercial purposes. The person appointed must be able to organize and supervise Distribution Work, Workshop Practice, and prepare plans and estimates.

Salary £450 rising to £500 per annum, plus War Bonus (at present £49 8s.).

The appointment will be subject to the provisions of the Local Government Superannuation (Scotland) Act, 1937, and the successful Candidate will be required to pass a medical examination.

Applications, stating Age, Qualifications and Experience and present position under the E.W.O. and National Service, and accompanied by *copies* of three recent Testimonials, with envelope endorsed "Distribution Engineer," should be addressed to the undersigned at Lanarkshire House, 191, Ingram Street, Glasgow, C. 1, and delivered not later than Friday, January 26, 1945.

WM. C. BROWNLIE,
County Clerk.

ASHTON GAS COMPANY

WORKING FOREMAN required for the above Company's Carburetted Water Gas Station. Must be thoroughly competent to take full charge of the Humphreys & Glasgow plant and also the purification of the gas.

Wage £7 per week including war bonus.

Applications, giving Age, full particulars of past and present employment, and position under National Service Acts and Essential Works Order, to General Manager, Ashton Gas Company, Ashton-under-Lyne.

YORK GAS COMPANY

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APPLICATIONS are invited for the position of WORKS FOREMAN. Previous experience in a similar position essential.

A house, rent free, will be provided; salary to be fixed according to the qualifications of the successful applicant.

Applications, together with *copies* of two recent Testimonials, to be forwarded to the undersigned.

CHARLES BATEMAN,
General Manager.
York, Harrogate and District Group of Gas Companies,
48, James Street,
Harrogate.

BURGH OF PAISLEY

(GAS DEPARTMENT)

APPOINTMENT OF DEPUTY ENGINEER AND MANAGER

APPLICATIONS are invited from fully qualified persons for the position of DEPUTY GAS ENGINEER AND MANAGER. The salary scale prescribed for the post is £600, rising to £750 per annum by increments of £40 (subject to satisfactory service), plus current war bonus of £49 8s. per annum. Placing on the scale will be in accordance with the qualifications, experience, and general suitability of the successful applicant.

The appointment is subject to the provisions of the Local Government Superannuation Acts, and the successful candidate will be required to pass a medical examination.

The following qualifications are essential:

(1) Age not to exceed 45 years.
(2) Membership of the Chartered Institution of Gas Engineers.
(3) Gas Engineering (Manufacture) Diploma of the Chartered Institution of Gas Engineers, or equivalent qualification.
(4) Experience:
  (*a*) Control and maintenance of vertical retorts and carburetted water gas plants.
  (*b*) High and low pressure distribution of gas, coupled with industrial and domestic utilization.
  (*c*) General administration.

Applications, stating Age, Qualifications, Training and Experience, together with present salary and applicant's position in relation to the National Service Acts and Essential Work Orders, and accompanied by *copies* of not more than three recent Testimonials, should be addressed to John P. Morrison, Esq., Town Clerk, Municipal Buildings, Paisley, for receipt not later than 12 noon on Saturday, January 27, 1945. Envelopes should be endorsed "Deputy Gas Engineer and Manager."

This advertisement is inserted under authorization from the Ministry of Labour and National Service.

SYDNEY SMITH,
Engineer and Manager.
Engineer's Office,
The Gas-Works,
Paisley, Renfrewshire.

ESTABLISHED manufacturer of gas water heaters requires Agent for sale of his appliances in Dublin. Contact with Gas Industry, Architectural Profession, Plumbing and Building Trades essential. Apply, giving full particulars, to No. 9401, "GAS JOURNAL," 51, High Street, Esher, Surrey.

THE LIVERPOOL GAS COMPANY

APPLICATIONS are invited for an ASSISTANT in the INDUSTRIAL GAS DEPARTMENT.

Applicants, who should be under 30 years of age, must have had a good education, with science and/or engineering as the main subject. They should have some drawing office experience, and be competent to carry out calculations involved in industrial problems. Some district sales experience will be an advantage.

Applicants should be the holders of the Higher Grade Certificate in Gas Supply or its equivalent.

Remuneration will not be less than £400 per annum, and the successful applicant will be eligible (subject to satisfactory medical examination) for entrance to the Officials' Superannuation Fund.

Applications (with *copy* Testimonials) should be addressed to The General Manager and Secretary, Radiant House, Bold Street, Liverpool, 1, and must be received not later than February 10, 1945.

January 11, 1945.

Advertisement issued by permission of the Ministry of Labour.

COMFORT THE SUFFERING

Give to the Duke of Gloucester's Red Cross and St. John Fund—and give a little extra.

Contributions should be sent to the Fund at St. James's Palace, London, S.W. 1.

Red Cross gratefully acknowledges free gift of this space

APPOINTMENTS VACANT (*ctd.*)

ESTABLISHED manufacturer of gas water heaters requires Agent for sale of his appliances in Belfast and Northern Ireland. Contact with Gas Industry, Architectural Profession, Plumbing and Building Trades essential. Apply, giving full particulars, to No. 9400, "GAS JOURNAL," 51, High Street, Esher, Surrey.

THE WOODALL-DUCKHAM COMPANY has vacancies on its OPERATING Staff. Applicants should either have Gasworks training or a University degree. Salary according to experience. Applications, stating Age, should be addressed to The Secretary, The Woodall-Duckham Company, Uplands, Epsom Road, Guildford, Surrey.

COMPANY NOTICES

COMMERCIAL GAS COMPANY

NOTICE IS HEREBY GIVEN that an ORDINARY MEETING of the Proprietors of the Commercial Gas Company will be held at the Offices of the Company, Harford Street, Stepney, E. 1, on Thursday, the 22nd day of February, 1945, at Two o'clock in the afternoon.

To receive the Directors' Report and the Accounts of the Company for the year ended the 31st December, 1944.

To elect Directors and an Auditor in the place of those retiring.

And to transact any other business.

The Stock TRANSFER BOOKS in respect of the ORDINARY STOCK WILL BE CLOSED from the 9th day of February to the 22nd day of February, both days inclusive.

NOTICE IS HEREBY ALSO GIVEN that, in accordance with the Standing Orders of Parliament, an Extraordinary Meeting of the Proprietors of the Commercial Gas Company will be held at the Offices of the Company, Harford Street, Stepney, E. 1, on Thursday, the 22nd day of February, 1945, at Two-Thirty o'clock in the afternoon (or so soon thereafter as the business of the Ordinary Meeting of such Proprietors to be held on the same day shall have been concluded) for the purpose of considering, and, if thought fit, of approving a Bill, which has been introduced into Parliament in the present Session, entitled, "A Bill to fulfil the requirements of Section 30 of the Commercial Gas Act, 1940."

By Order of the Board,
E. H. HARMAN,
General Manager and Secretary.
Offices, Stepney.
January 16, 1945.

PLANT &c. FOR SALE & WANTED

'PHONE 98 STAINES.

FOR SALE.—Tangye 3-Throw VERTICAL PUMP, 5 in. by 8 in.; 60 h.p. Browett H.S. Enclosed Steam Engine; Vertical Multitubular Boiler, 14 ft. by 4 ft. 9 in., 100 w.p.; Multitubular Cornish Boiler, 18 ft. 6 in. by 6 ft., 140 lb. w.p.; Cylindrical Pressure Tank, 30 ft. by 7 ft.; 7½ h.p. Crossley Gas Engine.

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FOR SALE.—LANCASHIRE BOILERS, 30 ft. by 9 ft. for 160 lb. (1922); 30 ft. by 8 ft. 6 in. and 8 ft. for 200 lb., 160 lb., and 120 lb.; 28 ft. by 7 ft. for 150 lb.; 22 ft. by 6 ft. 6 in. for 100 lb.; 20 ft. by 7 ft. for 135 lb. CORNISH, 16 ft. and 20 ft. for 100 lb. LOCO: Type, 1,500-2,000 lb. evap. for 100 lb. (sale or hire); VERTICAL 4 ft. to 13 ft. by 2 to 5 ft. for 80 lb. and 100 lb. BOILER STORAGE TANKS, all sizes. Enquiries solicited.

RATCLIFFE, "Boiler-Exchange," Hawarden, Chester. Hawarden 3118.)

FOR SALE.—Hornsby Stockport 96 h.p. GAS ENGINE, either Towns or suction gas, complete with all accessories; has electric wheel and new bearings and rings; in excellent condition, cheap. Apply Laycock, Dyson & Laycock, Solicitors, Huddersfield.

FOR SALE.—A Number of Wrights' "St Andrew" Gas-Water RADIATORS. Also 2.6 Col. Wrights' "St. Vincent" non-water type RADIATORS. Cheap. Address No. 9399, "GAS JOURNAL," 51, High Street, Esher, Surrey.

Get in on the Under Belly of RUST (Engineers' Enemy No 1.)
Years of Wear instead of Weeks
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Steel Wires, Ropes & Cables running in and out of Water, Gas, Sulphurous Fumes, etc. will never RUST if treated with
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154 different charts *are stocked* (in thousands of each kind), and, as most are applicable to various units of vacuum and/or pressure, it will be apparent that something like 1000 different ranges can be provided.

Chart supplies: An adequate stock, based on potential demand, is held available to meet normal demand. Occasions do occur, however, when a run on a particular chart depletes stock temporarily. Our arrangements then make it possible to replace within a month.

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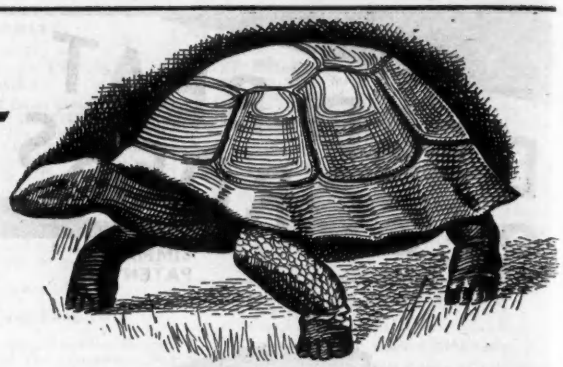

THE TORTOISE.—*The land variety of the Turtle, from the Old French tortis—twisted. Of the order of reptiles CHELONIA: toothless reptiles with well-developed limbs and with dorsal and ventral shell composed of numerous bony plates.*

The tortoise is lucky indeed in that nature has provided him with adequate protection from attack. Man is not so fortunately endowed, and his need for protection extends even to his commercial and industrial life. In the Gas Industry that is where "A & M" Meters come into the picture. The "A & M" Meter is a precision instrument which records faithfully, and for an indefinite period of time, the volume of gas passing through it. Thus the "A & M" Meter affords valuable protection to supplier and consumer alike.

your *protection* is the

"A&M" METER

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PUMPS FOR THE GAS INDUSTRY

THE

"RELIABLE"

STEAM

PUMPING ENGINE

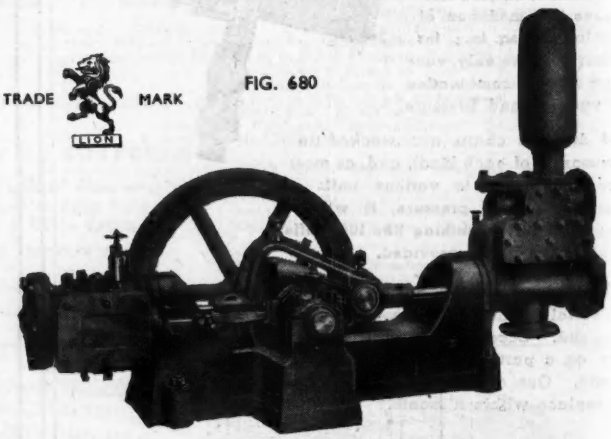
FOR

THIN TAR, AMMONIACAL LIQUOR, BENZOLE, LIGHT OILS AND WATER

PLEASE APPLY FOR CATALOGUE No. 8C.

TRADE MARK LION

FIG. 680



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CULWELL WORKS, (WOLVERHAMPTON) LTD.

WOLVERHAMPTON.

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Wires: "Dryosbo, Westcent."
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NON-SETTING PAINT

Used by the leading Gas Companies for the protection of the lower plates and cuppings of gas-holders. The most efficient anti-corrosion paint in existence

HUMIDINE NEVER DRIES, NEVER CRACKS AND IS ABSOLUTELY IMPERVIOUS TO WATER

OXY-GRAFITE PAINT

For the Protection against the corrosive effects of acid and alkaline fumes on all iron and steel-work of gasworks, Aspinalls Oxy-Grafite Paint is unsurpassable

Full particulars and prices on request from the sole proprietors

ASPINALLS (PAINTS) LIMITED
CARLETON — SKIPTON — YORKS

KING ELECTRIC BLOCKS
LIFT A LOAD
BY FINGER TIP CONTROL

Speaking of pressing a button and getting the work done! Into the air and along it goes—just as easy as that. Three models available: Minor, Major and Mammoth—all built for continuous heavy duty. Overhead runways erected if required.

Write for booklet on Lifting & Shifting

GEO. W. KING LTD HITCHIN · HERTS ·
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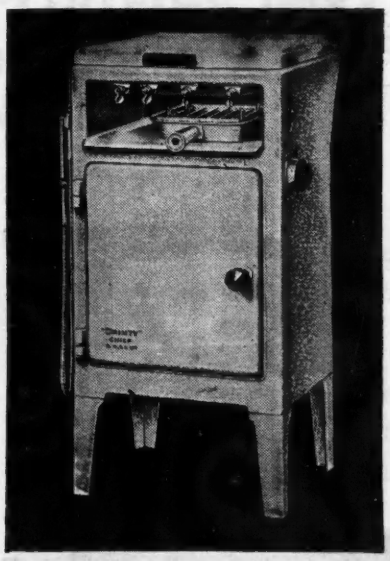
The DAINTY *Chief*



Streamlined modern design, cast iron construction and many other special features—notably economical consumption of gas.

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PEEL FOUNDRY, DERBY

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A POWERFUL ROBUST SELF-SUSTAINING WINCH

WINCHES

Smallest wall space, side or front driving also special types, including multi division barrels, combined horizontal and vertical operation, etc.

Used Largely for Black-out Shutter Operation

Also used for Blinds, Electric Lighting Fittings in Halls, Hotels, etc. Dampers, Curtains, Laundries, Steamer Lids, Hospitals, Street Lighting, A.R.P. Clothes Racks, Hoses, etc.

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NO
RATCHETS, PAWLS, SPRINGS or GEAR WHEELS

If you need

PRESSURE DIECASTINGS
in Zinc Base Alloy

enquire of **GILLS PRESSURE CASTINGS**
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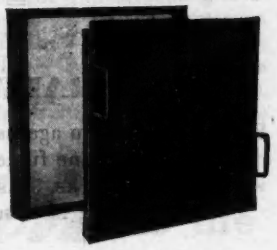
Clean air can be ensured to any machine, such as compressor or diesel, or to a building by including a "Visco" Air Filter in the ventilating system.

The "Visco"—pioneer of the oil-film type of filter—extracts 98% dust from the air passed. With our "Dry Cell" pattern, 99·9% dust is removed.

The thousands of "Visco" Air Filters in factories, steelworks and industrial buildings, and in the air-conditioning systems of trains, hospitals and research stations, testify to the popularity—due entirely to efficiency, simplicity and reliability—of this well-known filter.

Bring your Air Filtration problem to us. We have a filter that will provide the solution.

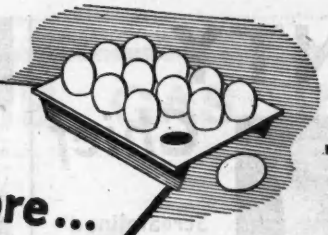


VISCO AIR FILTERS

VISCO ENGINEERING CO. LTD. · STAFFORD ROAD · CROYDON

Telephones: CROydon 4181–4 and 2471 Telegrams: CURTMIT, CROYDON

When it's eggs by the dozen once more...



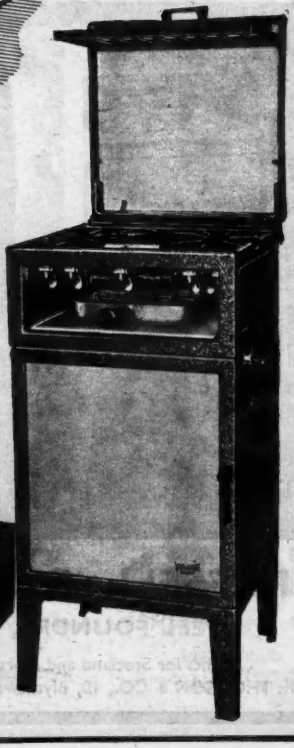
When women can again be lavish with ingredients, they'll need new gas cookers. Vulcan will meet this need.

Modern stream-lined cabinet type cookers with closing cover top; attractive and practical.

Vulcan Regulator, providing Automatic Oven Heat Control.

Most Efficient Burner Planning.

Porcelain enamel Finish.



VULCAN *Stoves*

THE VULCAN STOVE CO. LTD., EXETER V.1

Another Noteworthy Contract

PURIFIER INSTALLATION

Comprising 5 Purifiers 50′ × 40′ × 6′ deep with Clapham's Patent Triumph Valves

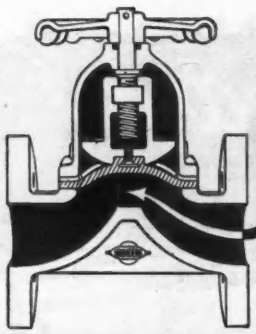
The erection of this installation for an important Colliery Company represents another example of Clapham's contribution to the progress of the Gas Industry.

Over one hundred years of specialisation in this kind of work is behind every Clapham job, and our organization is at your service at all times to co-operate in bringing your equipment into line with the latest developments.

CLAPHAM BROS. LIMITED

MAKERS OF GAS WORKS EQUIPMENT SINCE 1837

KEIGHLEY-YORKS - Tel: 2787-2788 - Grams: Clapham Bros., Keighley.



IT STANDS TO REASON—No. 5

Streamline Flow

Note the smooth interior contours—no turbulence, no restriction, frictional loss negligible! Streamline design is just one of the points that make this the only economical valve for *your* work. Complete illustrated technical data, free on mentioning this publication.

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SAUNDERS DIAPHRAGM VALVES

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MANUFACTURERS OF SMALL HIGH CAPACITY AND STANDARD METERS—SLOT AND ORDINARY

— ALSO —

SPECIALISTS IN LIGHT MECHANICAL AND ENGINEERING ASSEMBLIES

REPETITION TURNED WORK

SEND YOUR ENQUIRIES

ADAMS PLACE, GEORGES ROAD, HOLLOWAY, LONDON, N.7.

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High Duty Coatings

THE OUTSTANDING

anti-corrosives

of the War

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CONTRACTORS TO ADMIRALTY AND ALL DEPARTMENTS OF H.M. GOVERNMENT.

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WASHED NUTS
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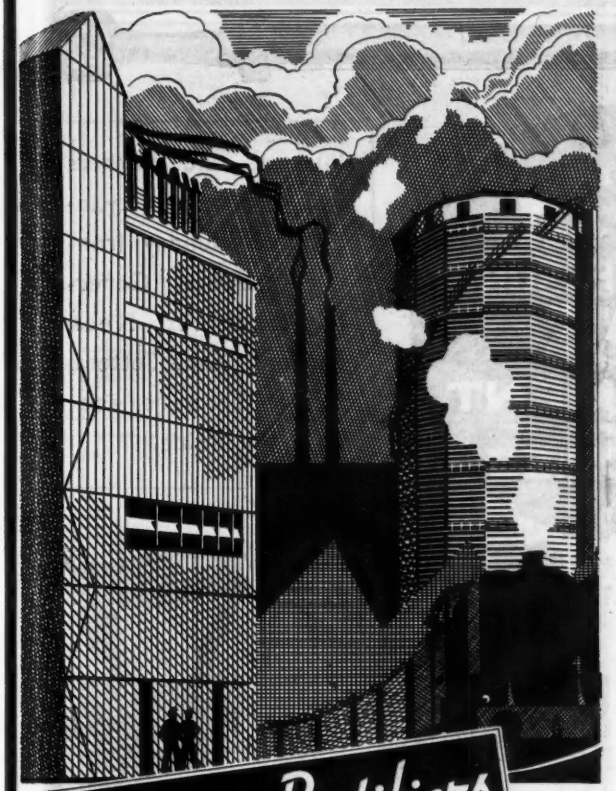
GAS MIXTURE

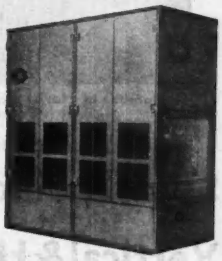
THE HORDEN COLLIERIES, LTD.
CROWN STREET CHAMBERS, DARLINGTON
FITTERS
FEETHAM & GRIEVESON
MILBURN HOUSE, NEWCASTLE-ON-TYNE
And ST. MARGARETS HOUSE, VICTORIA STREET, S.W.1



Hewittic Rectifiers

FOR D.C. SUPPLY IN GAS & CHEMICAL WORKS

HEWITTIC Rectifiers are the ideal equipment for operating D.C. electrical plant in gas and chemical works, from an A.C. supply. Simple, easily and economically installed in existing buildings and awkward sites; superior to rotating equipment and to other forms of A.C. to D.C. converting plant; operates **completely unattended.**



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A Post-War Problem solved!

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This need present no difficulty. If Street Lamps are fitted with Peebles Street Lamp Governors the pressure and volume at lamps can then be regulated to a nicety to suit the burners. The result—maximum illumination of which the lamps are capable for minimum gas consumption.

Peebles

STREET LAMP GOVERNORS

We will send for free trial a specimen governor to any Gas Manager applying for same. State pressure required at burners and size of screw threads. Write to:

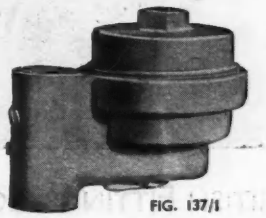

FIG. 137/1

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E.I.H.

6, 8, 10 and 12 lb. Laundry Hand Irons
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Gas Iron Stands, Fitting Equipment and Pea Jets for lighting.

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HIGH-PRESSURE
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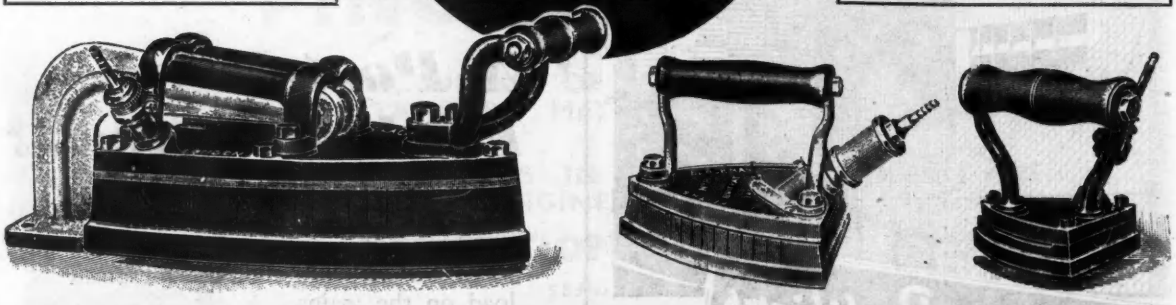
Injectors and Burners for heating the cylinders of Laundry Ironing Machines, Goffering Machines, Neck Banders, Yoke Setters, Collar Shapers, etc., from the inside.



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Ten years ago, Keith Piercy Ltd. became an associated company of Albright & Wilson Ltd., phosphate manufacturers.

It has been decided that for reasons of policy and development, the water treatment business of Keith Piercy Ltd. will be carried on in the name of the parent company, Albright & Wilson Ltd. The personnel and organisation remain unchanged.

In future all orders and correspondence should be addressed to the Water Treatment Department,

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GAS
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TUBES, SPECIAL SEMI-SILICA
QUALITY FOR SEGMENTAL RETORTS
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Manufacturers of
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